

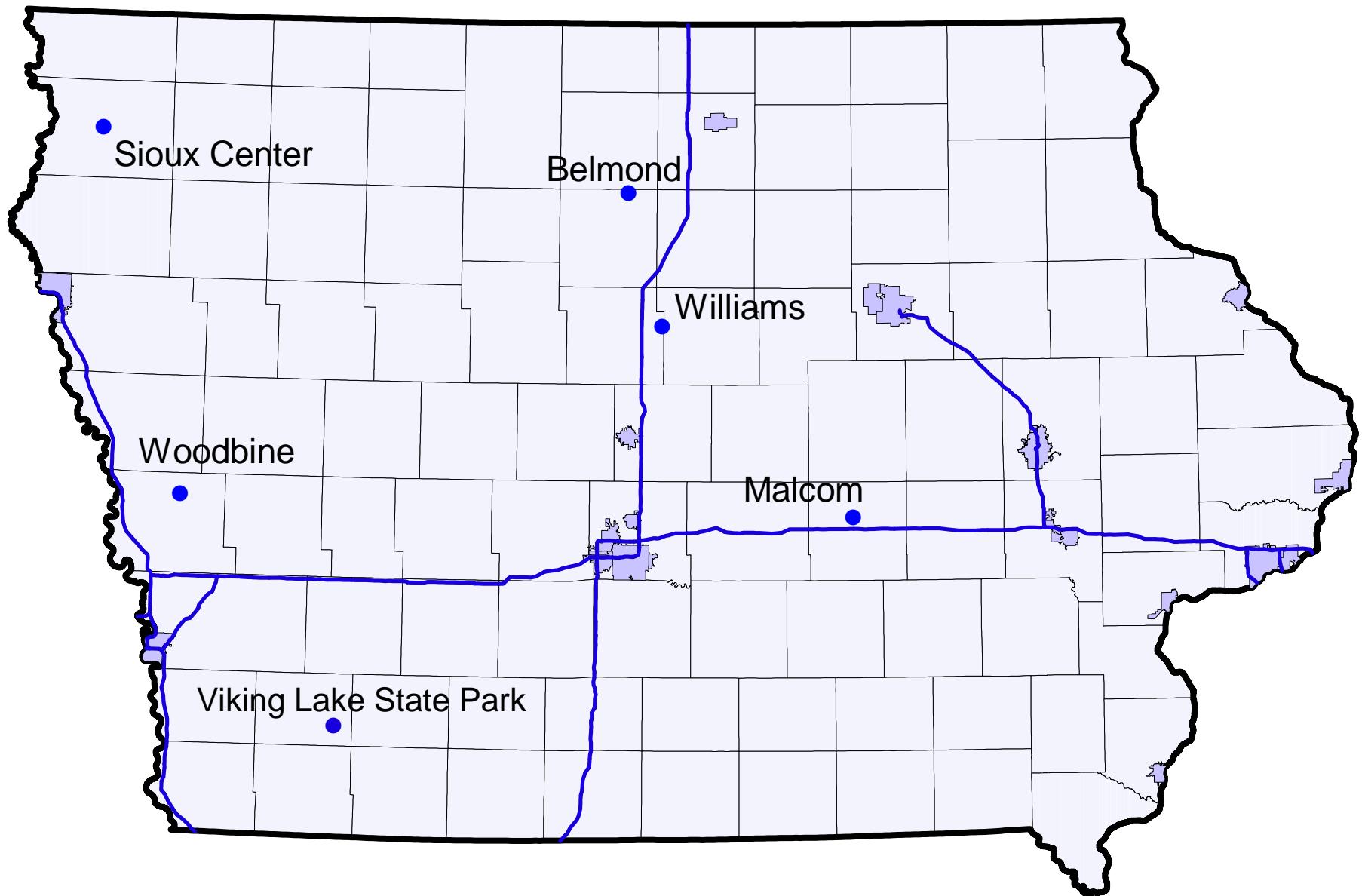
CAFO Monitoring in the first half of 2004 - Old Network

Twelve monitoring sites were operational at some point in the first half of 2004 near some the largest confined animal feeding operations in the state. These twelve sites can be broadly divided into an "Old Network" and a "New Network". The 2004 old network consists of five sites that were selected before the new hydrogen sulfide rule was written. Because they did not conform to the site selection guidelines contained in the new rule, these five sites were discontinued in the first half of 2004. Details regarding the general location of the five discontinued monitors, and the name of the closest animal feeding operation, are presented in the map and table on the next two pages. Raw data used to create this document was downloaded from the AIRS database on 8/16/04.

Viking Lake State Park is a background ammonia monitoring site without nearby animal feeding operations. Data from this site has been included in this report for comparison purposes. Several types of graphs have been plotted for each site.

- The concentration of each pollutant (in parts per billion by volume) is plotted against time. Data that failed quality assurance checks, along with instrument malfunctions, has been omitted.
- The second type of graph shows the relationship between pollutant concentration and wind speed. This type of graph can be useful along with locational data for analysis of the pollutant dilution and possible effects of other sources.
- Graphs have also been included to show if there is any relationship between the measured concentrations of hydrogen sulfide and ammonia where appropriate.
- The second last type of graph is pollutant concentration plotted against wind direction. The direction the wind is coming from is specified using an angle between 0 and 359 degrees. 0 represents a wind from due north, 90 from due east, etc.
- The last plot in each series shows how wind speed varies with wind direction.

First Half 2004 - Old CAFO Network



CAFO Monitoring Sites - 2004 Old Network

The following sites were discontinued in the first half of 2004:

Nearby Town	County	Animal Type	Closest Facility	Site Type	Permitted Weight in lbs.
Belmond (Old)	Wright	Swine	Buseman	1	2,310,000
Malcom	Powesheik	Poultry	Fremont Farms	1	15,600,000
Sioux Center	Sioux	Beef	Sioux CO-OP	2	13,000,000
Stanton (Viking Lake)	Montgomery	---	None-Background Monitor	---	---
Williams	Hamilton	Swine	DeCoster #7	3	2,100,000
Woodbine	Harrison	Swine	Geiman/Woodbine	2	3,012,000

Site Type	Explanation
1	In ambient air, on property associated with a residence, close to house
2	In ambient air, on property associated with a residence, close to an animal feeding operation
3	In ambient air, not on property associated with a residence



Belmond Monitoring Site

Swine Finishing

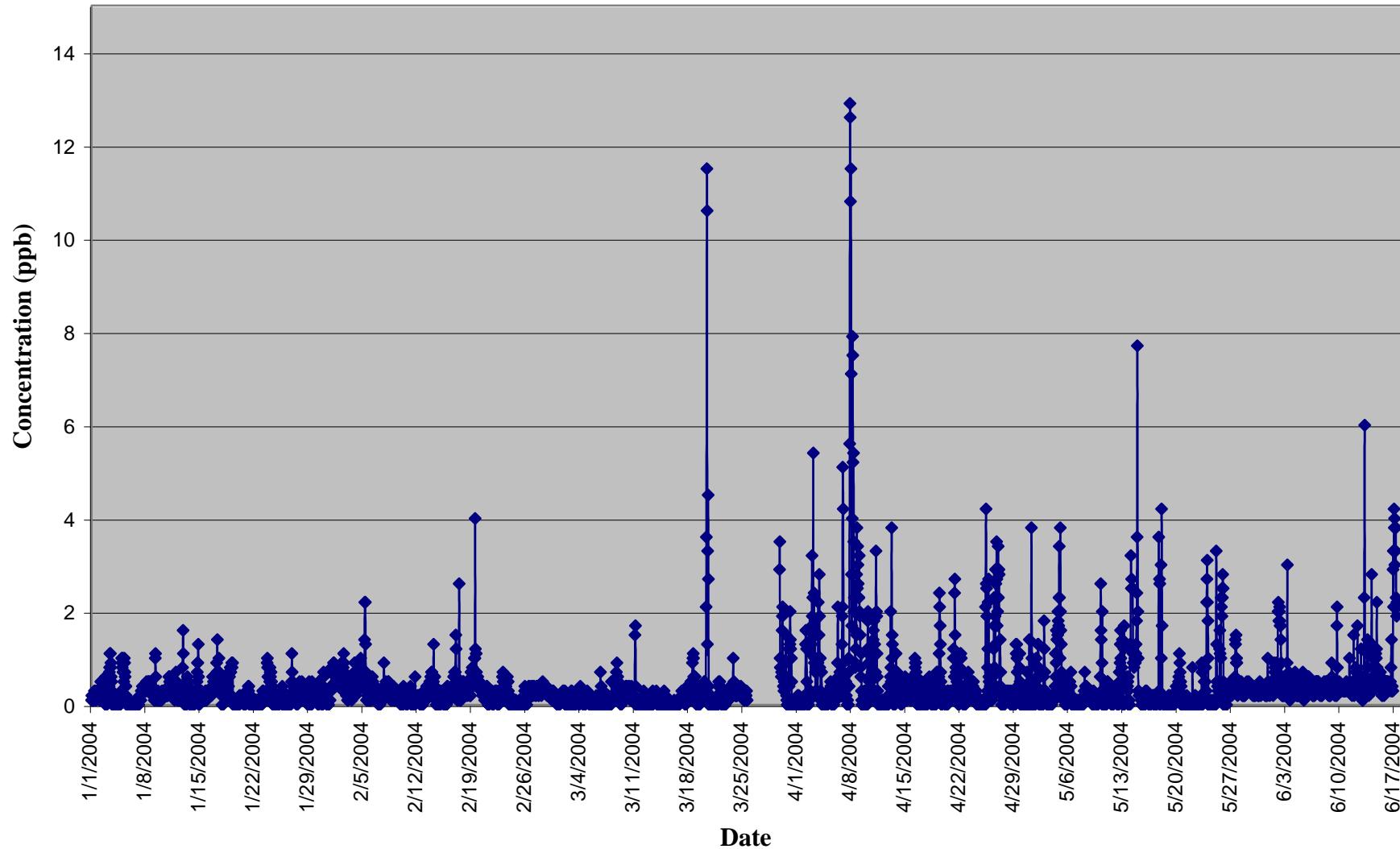
Swine Finishing

House

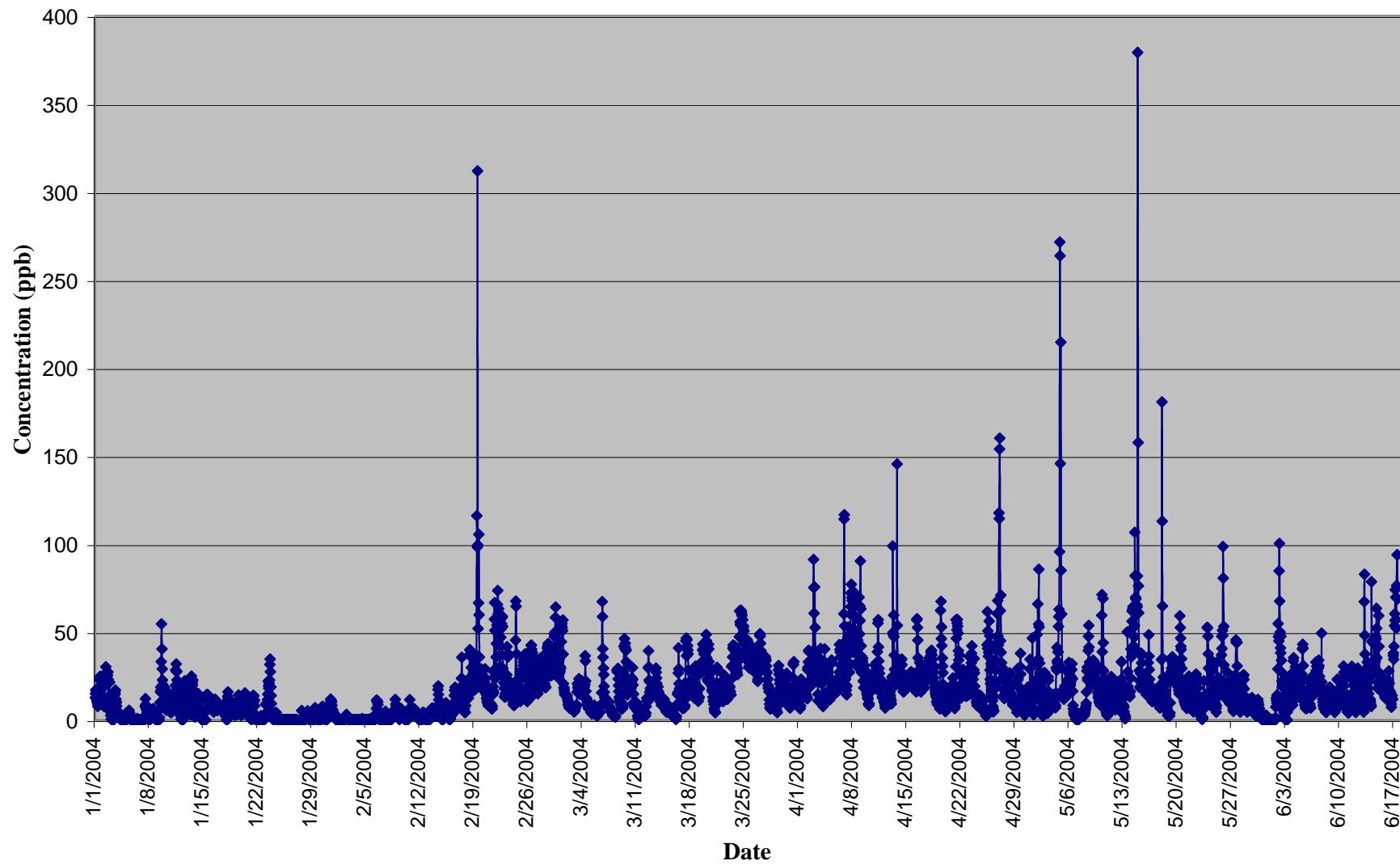
Monitor Site

0.5 miles

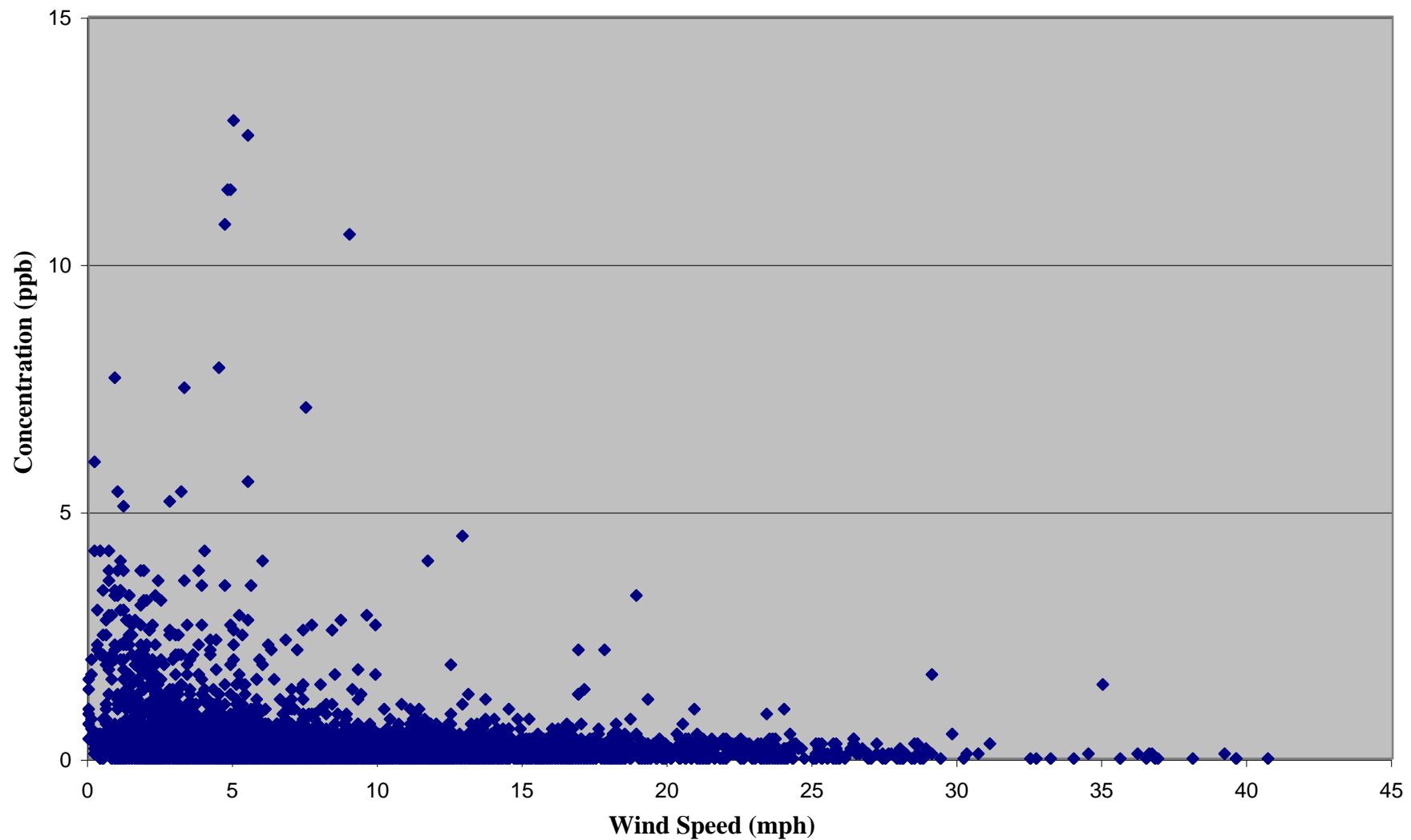
Belmond CAFO: Hydrogen Sulfide vs Time



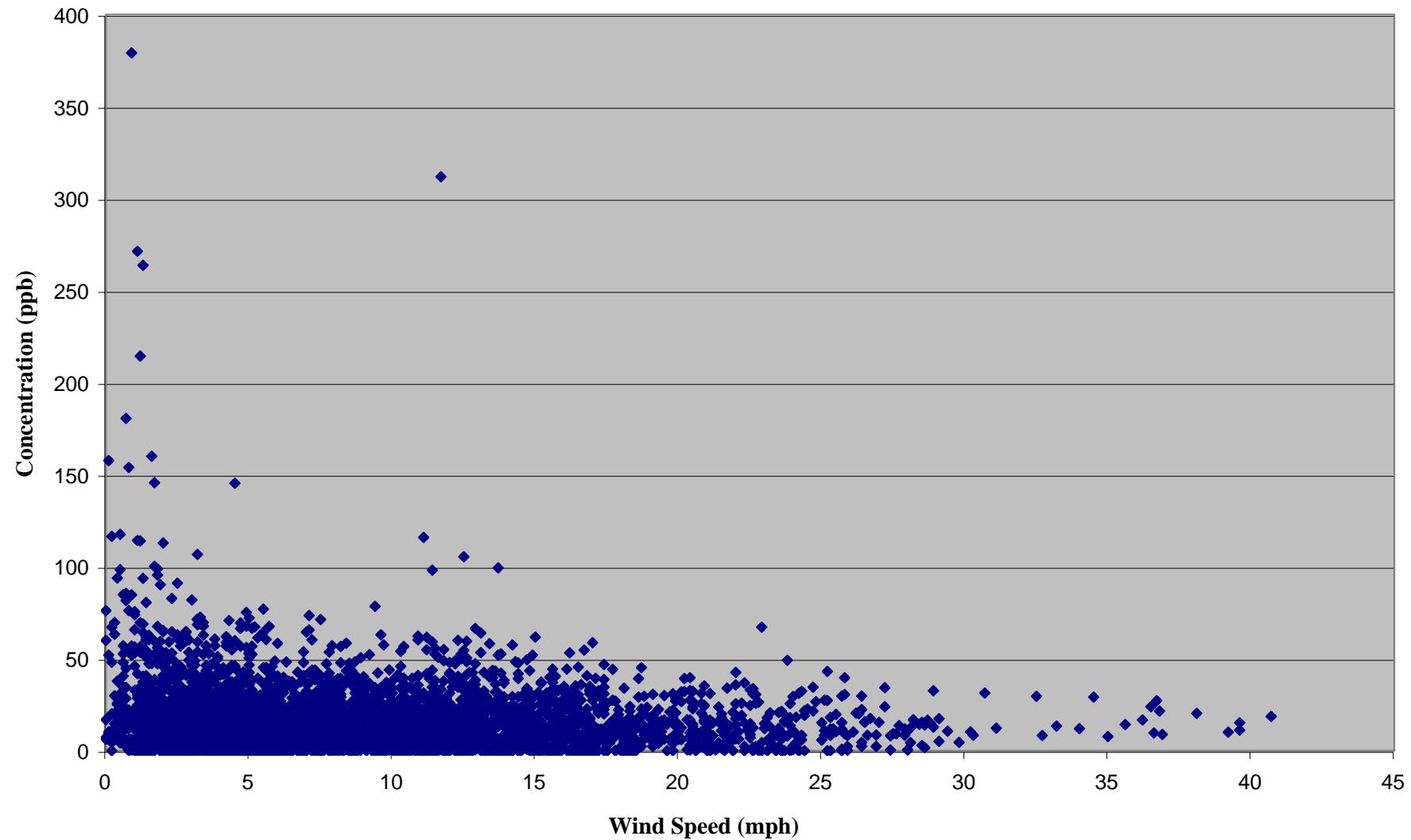
Belmond CAFO: Ammonia vs Time



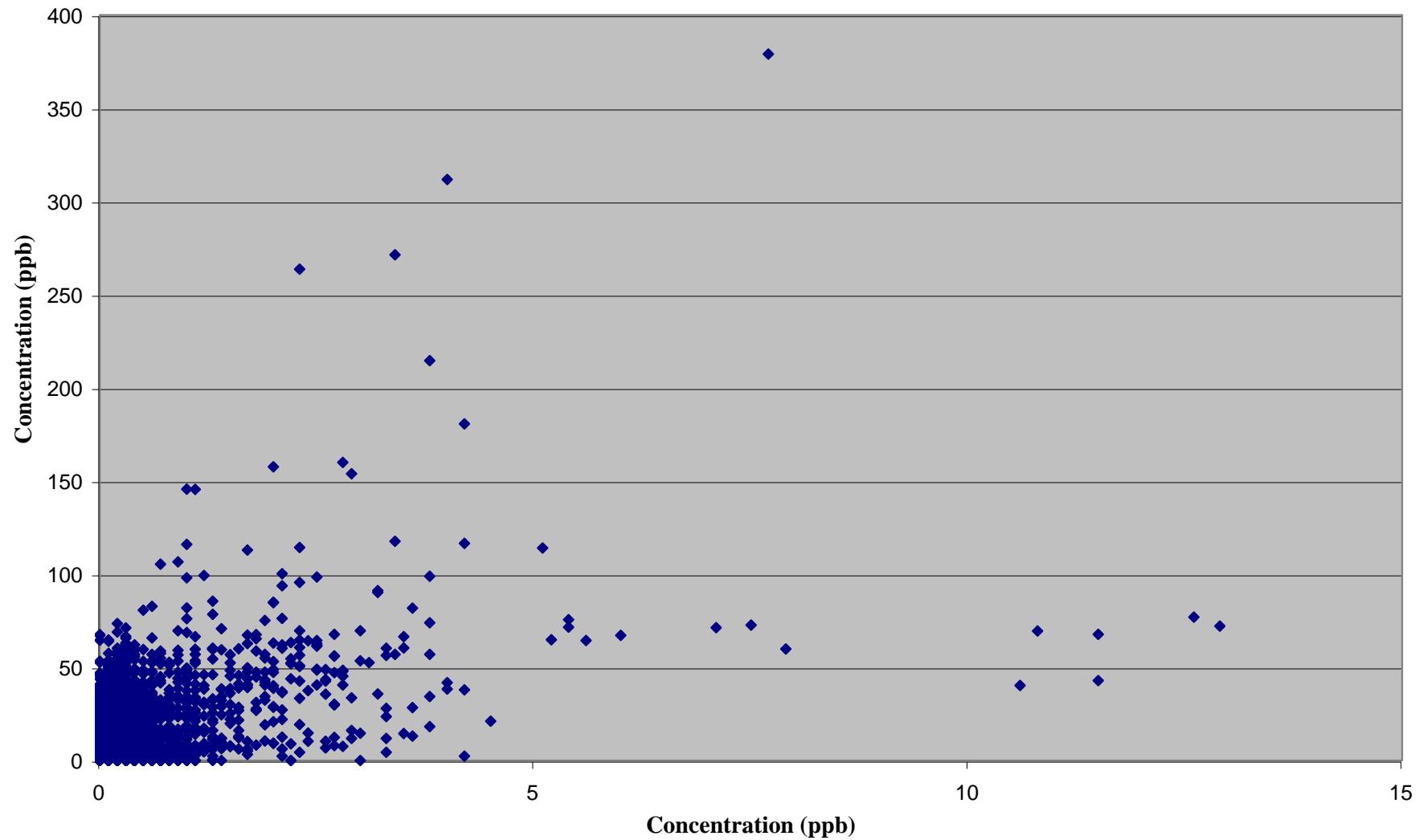
Belmond CAFO: Hydrogen Sulfide vs Wind Speed



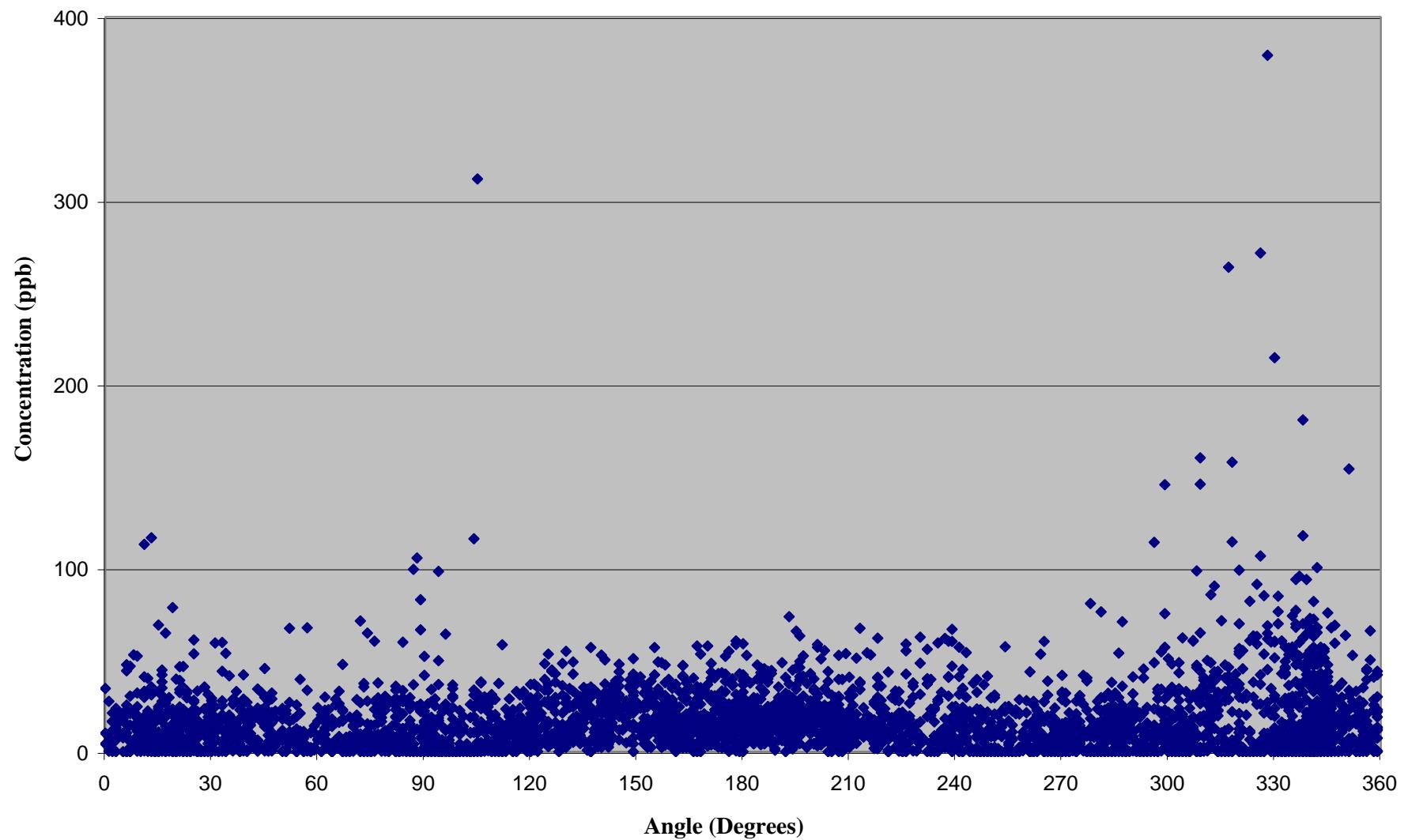
Belmond CAFO: Ammonia vs Wind Speed



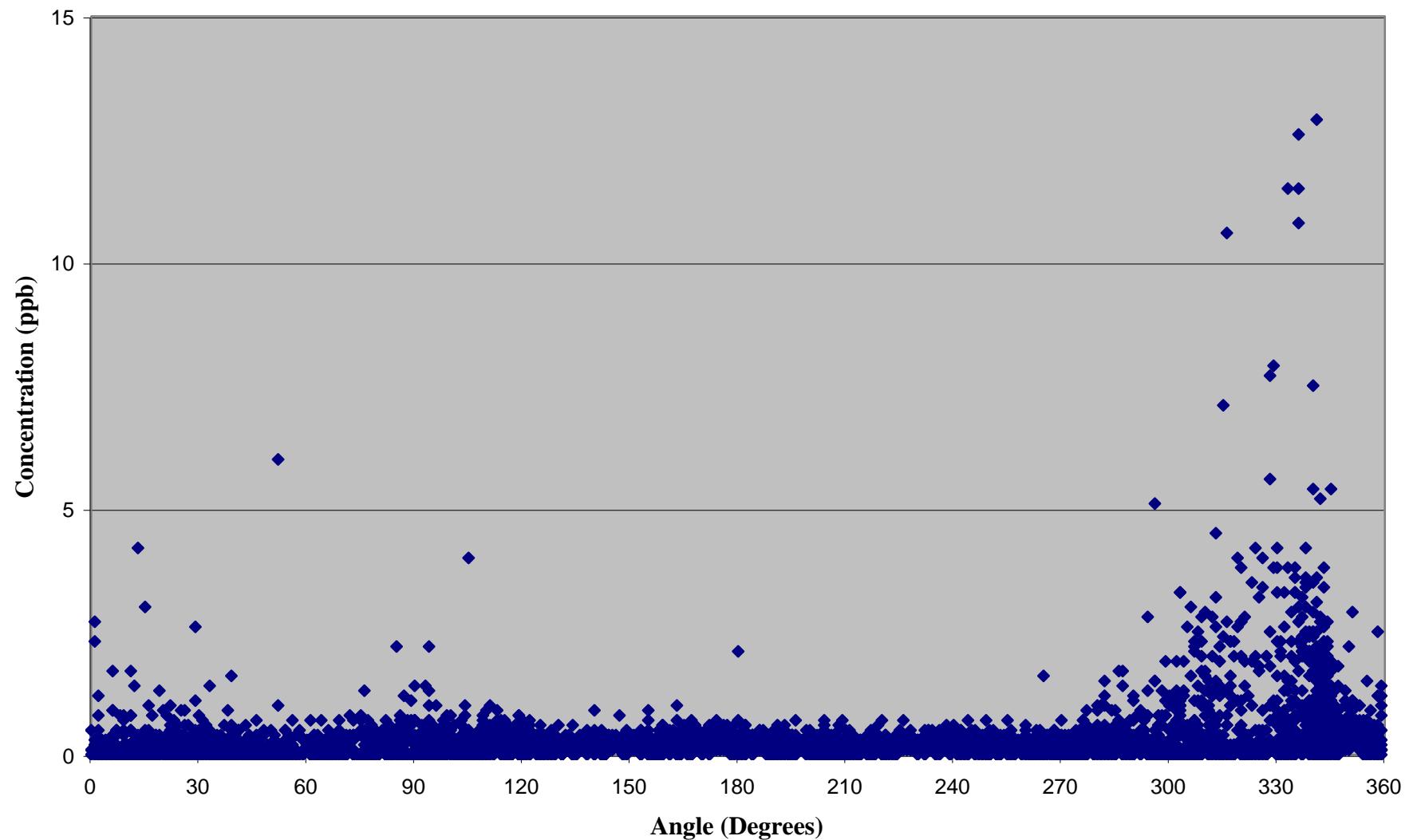
Belmond CAFO: Ammonia vs Hydrogen Sulfide



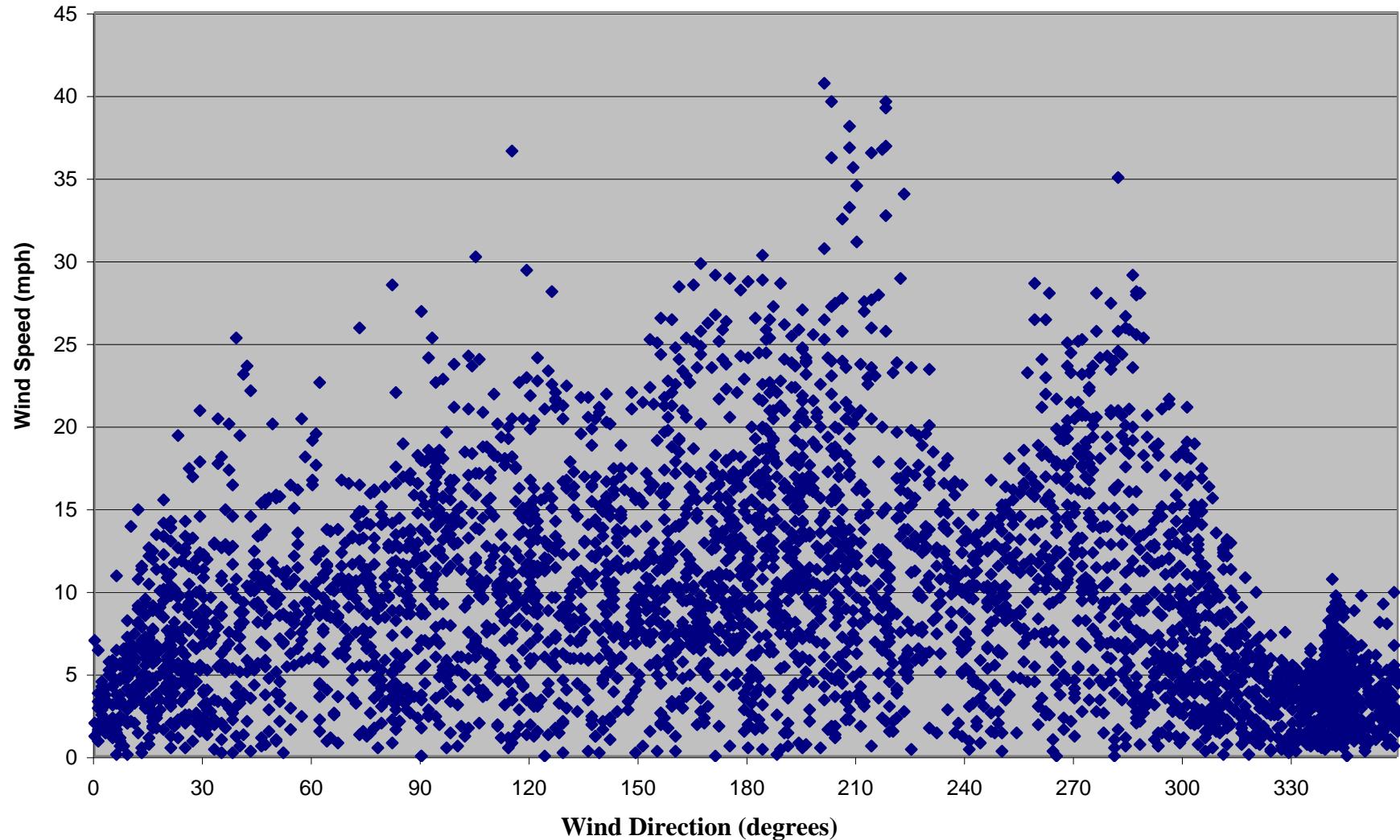
Belmond CAFO: Ammonia vs Wind Direction



Belmond CAFO-Hydrogen Sulfide vs Wind Direction



Belmond CAFO: Wind Speed vs Wind Direction



Malcom Monitoring Site

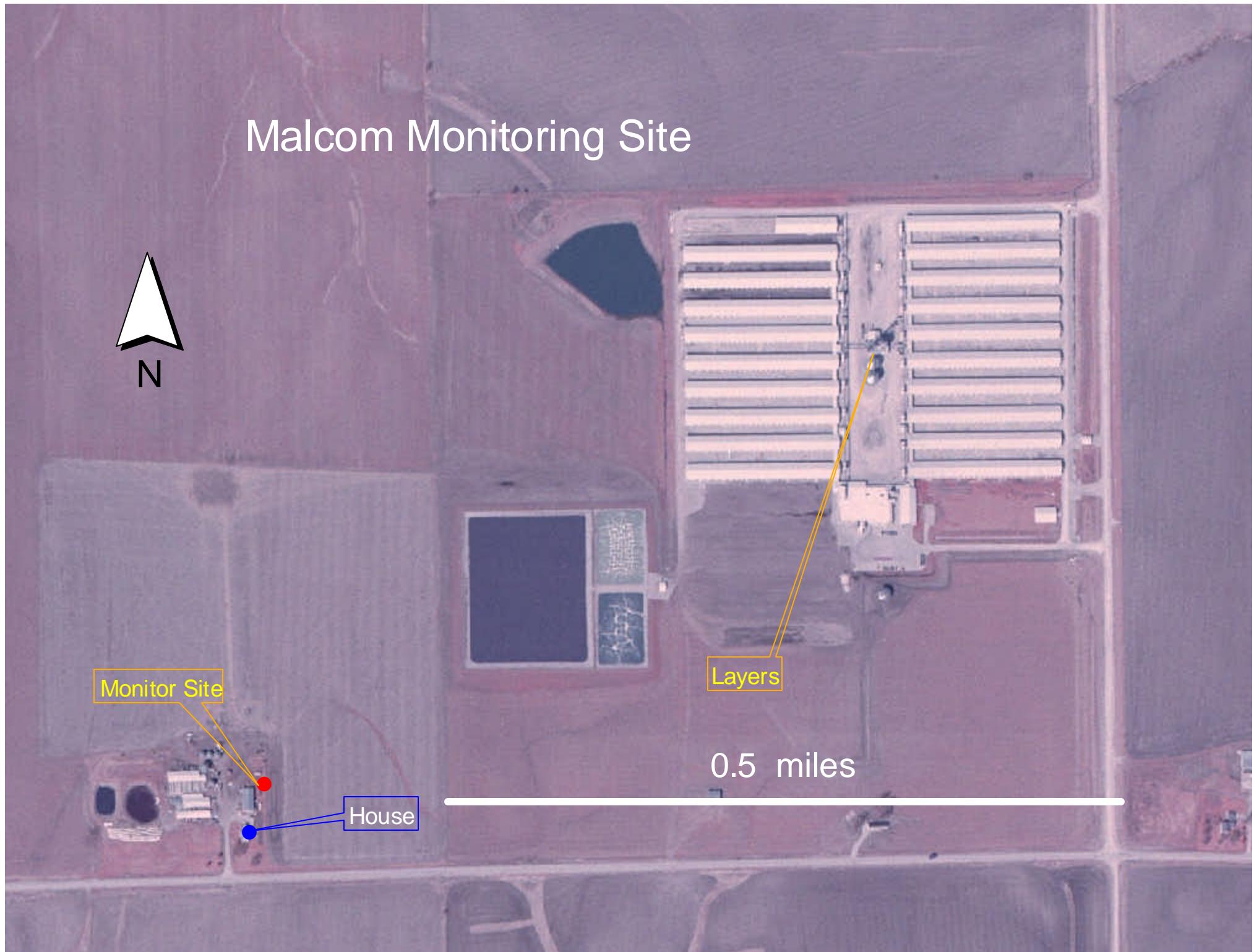


Monitor Site

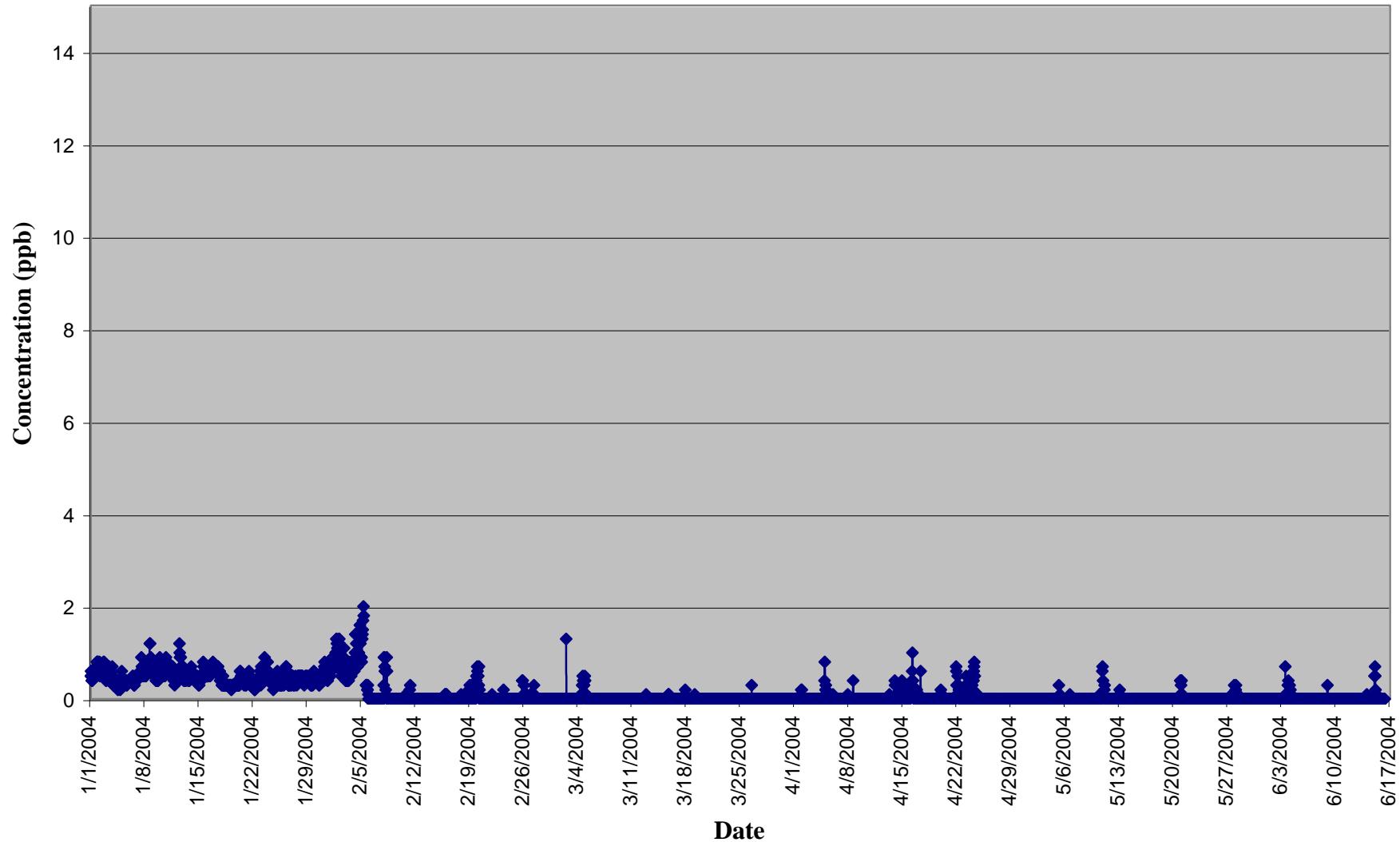
Layers

House

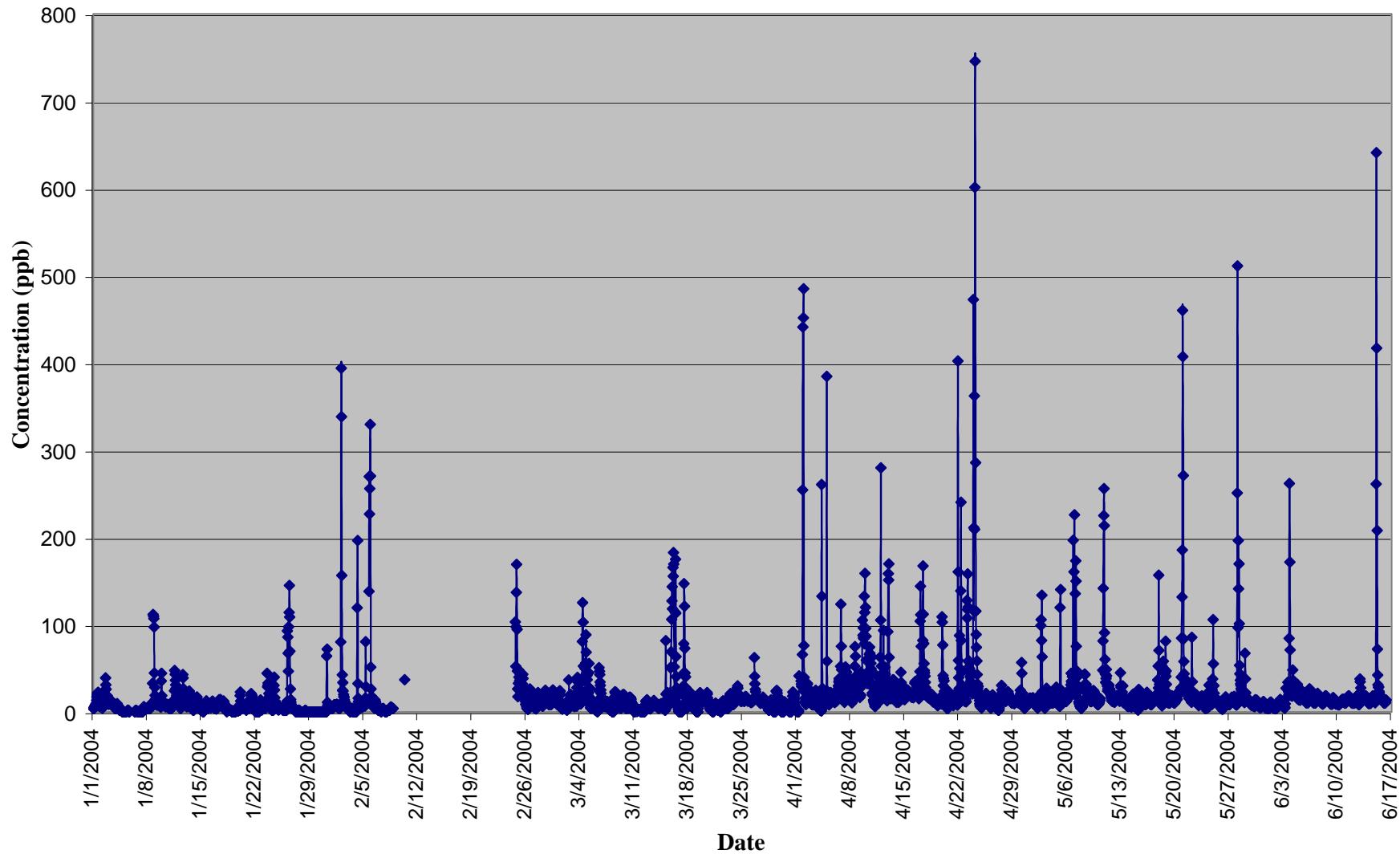
0.5 miles



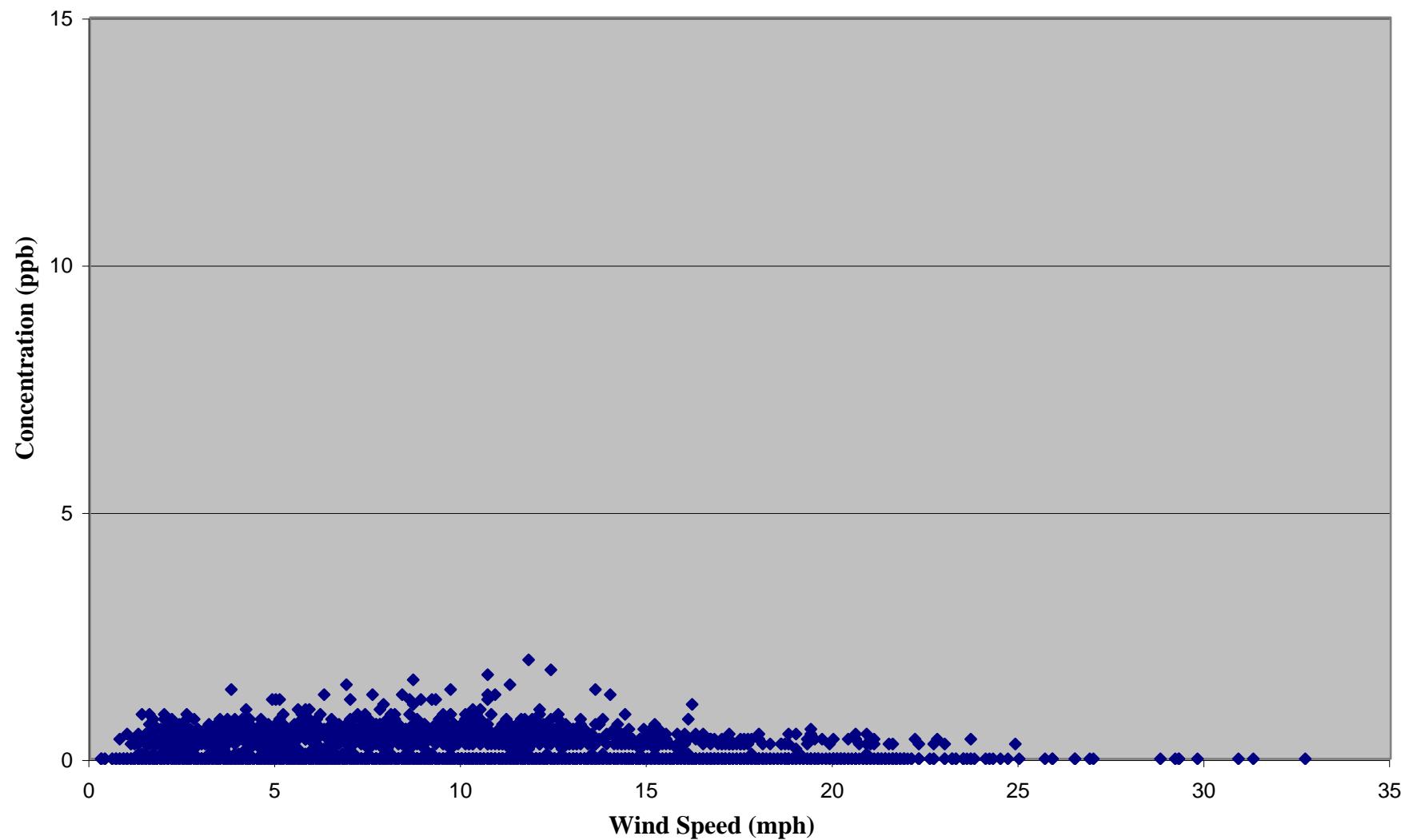
Malcom CAFO: Hydrogen Sulfide vs Time



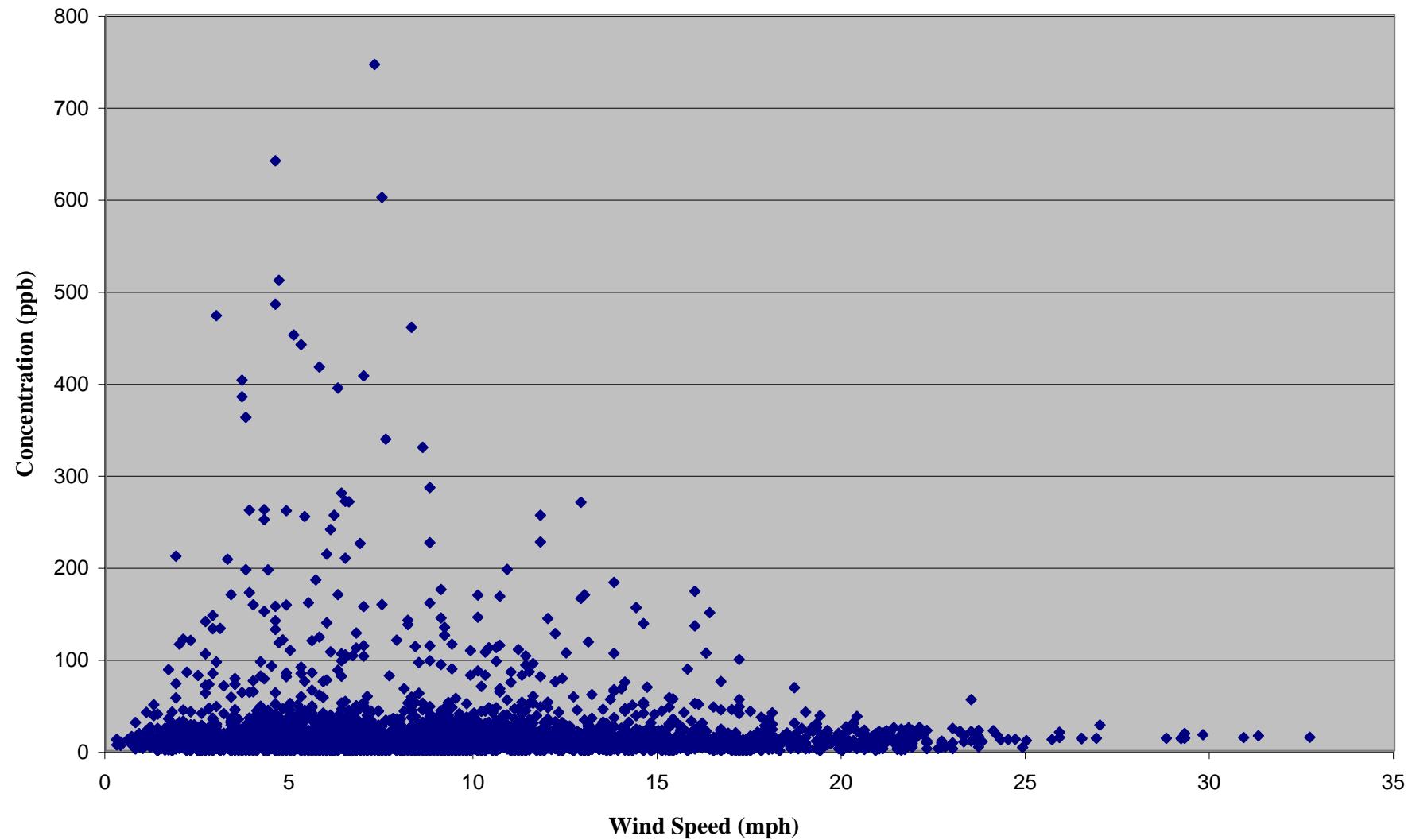
Malcom CAFO: Ammonia vs Time



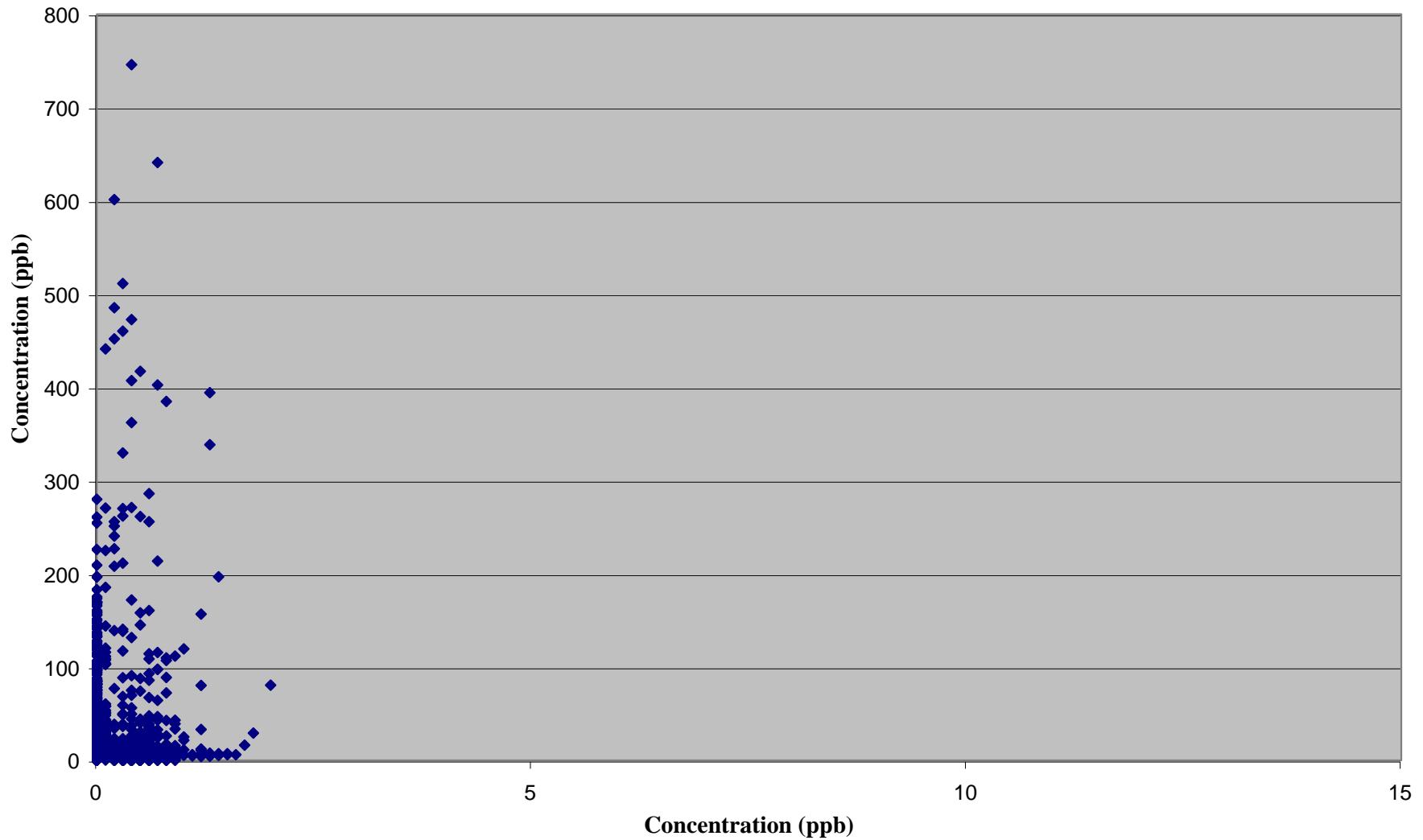
Malcom CAFO: Hydrogen Sulfide vs Wind Speed



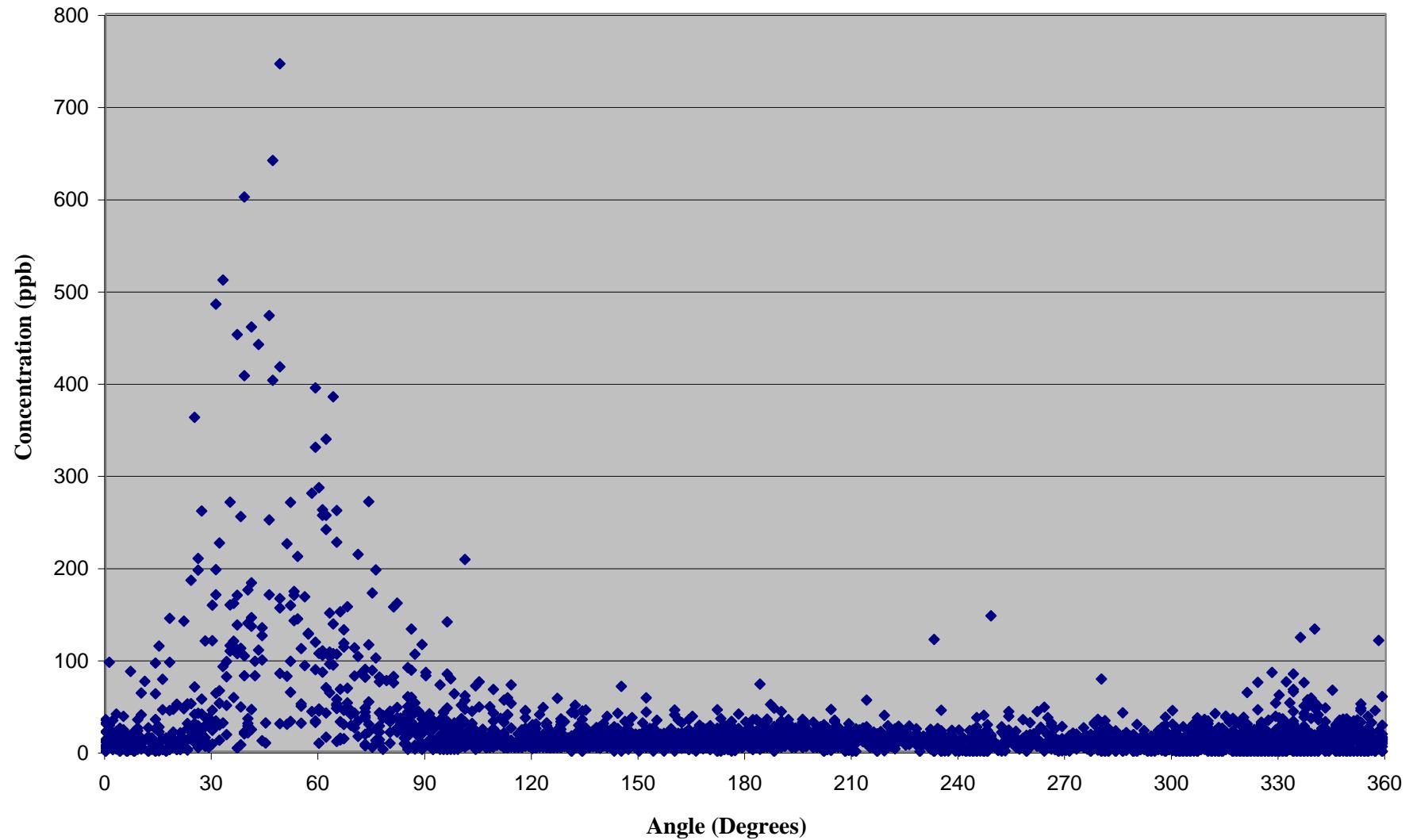
Malcom CAFO: Ammonia vs Wind Speed



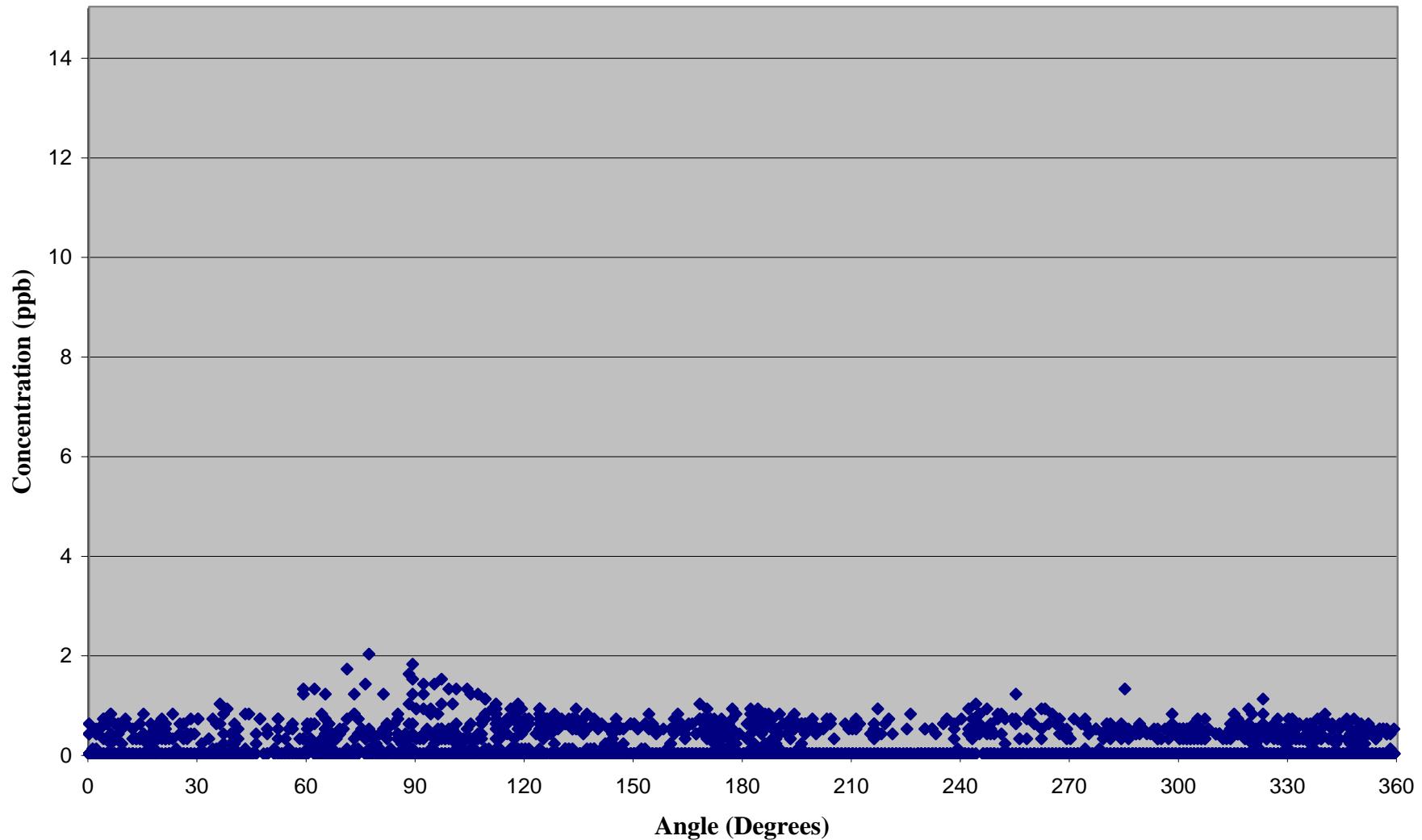
Malcom CAFO: Ammonia vs Hydrogen Sulfide



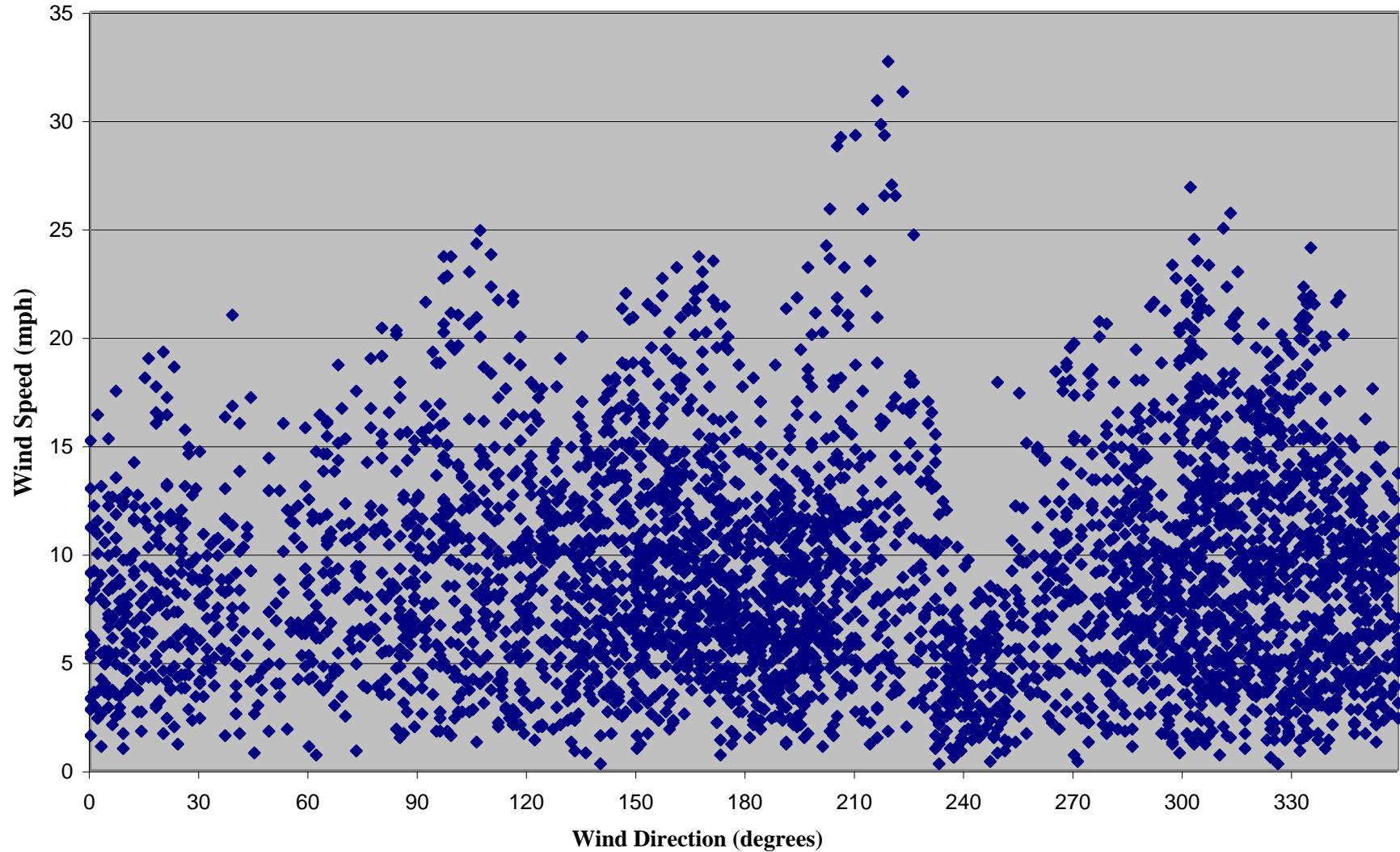
Malcom CAFO: Ammonia vs Wind Direction



Malcom CAFO-Hydrogen Sulfide vs Wind Direction



Malcom CAFO: Wind Speed vs Wind Direction





Sioux Center Monitoring Site

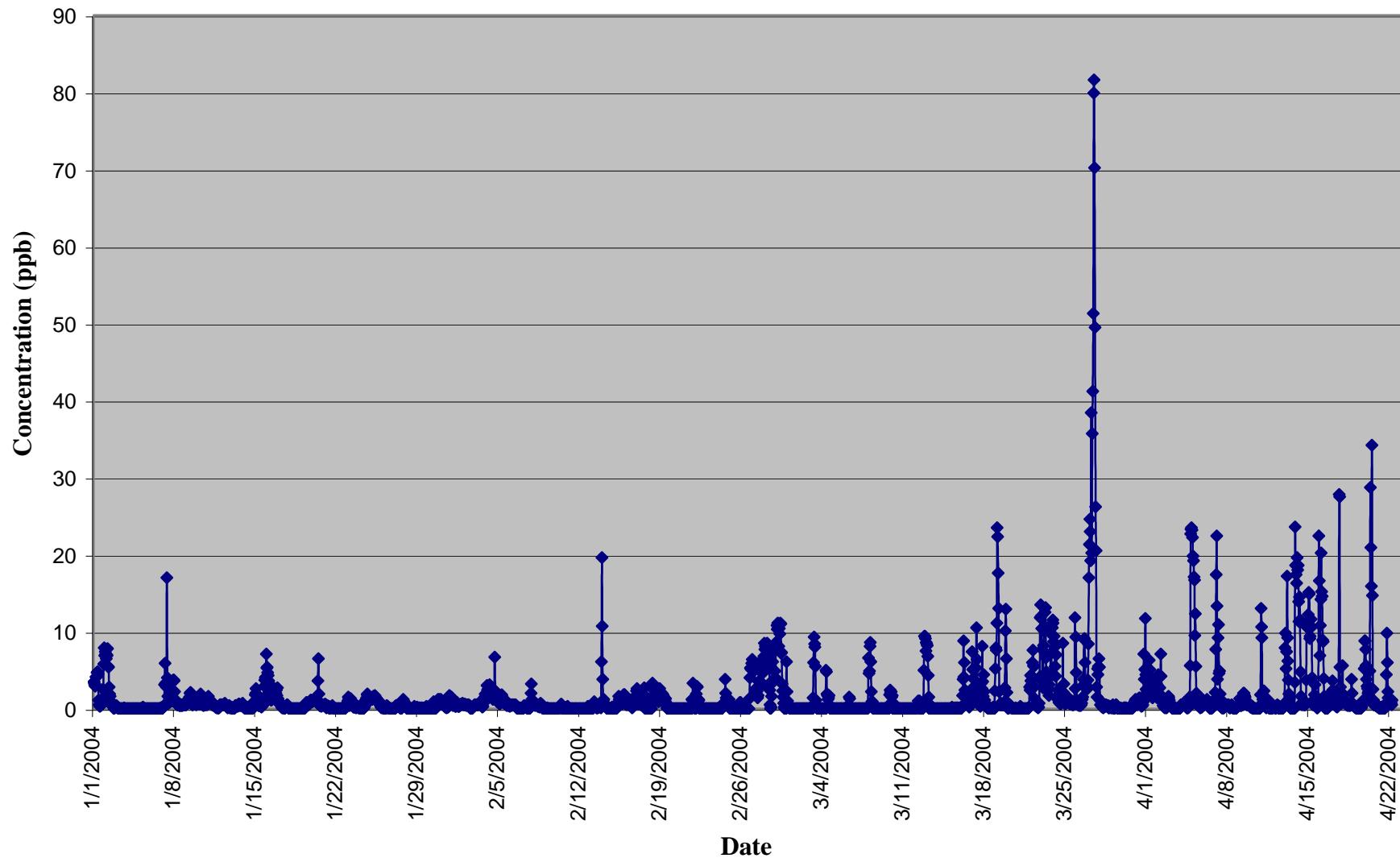
House

Monitor Site

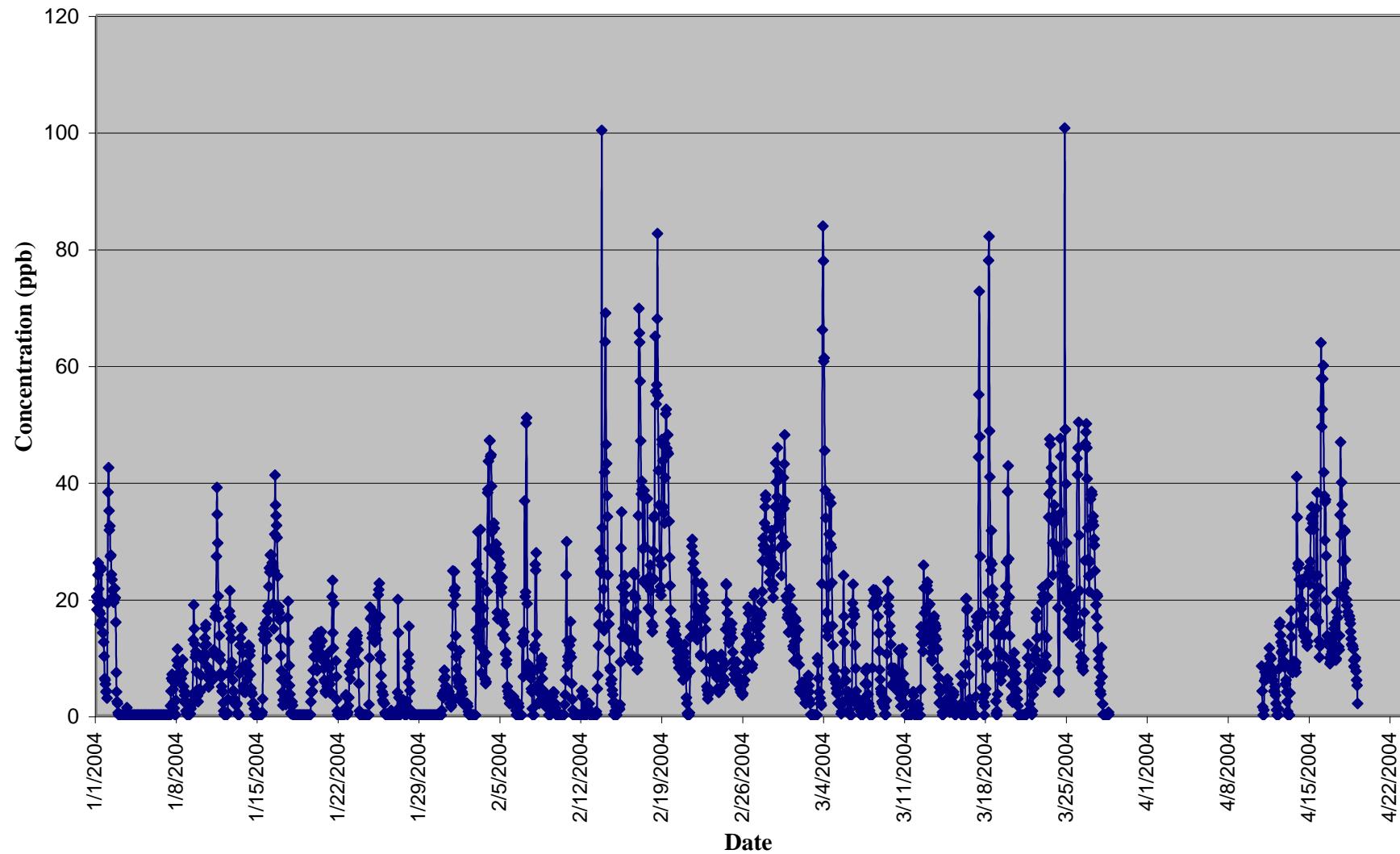
Beef AFO

0.5 miles

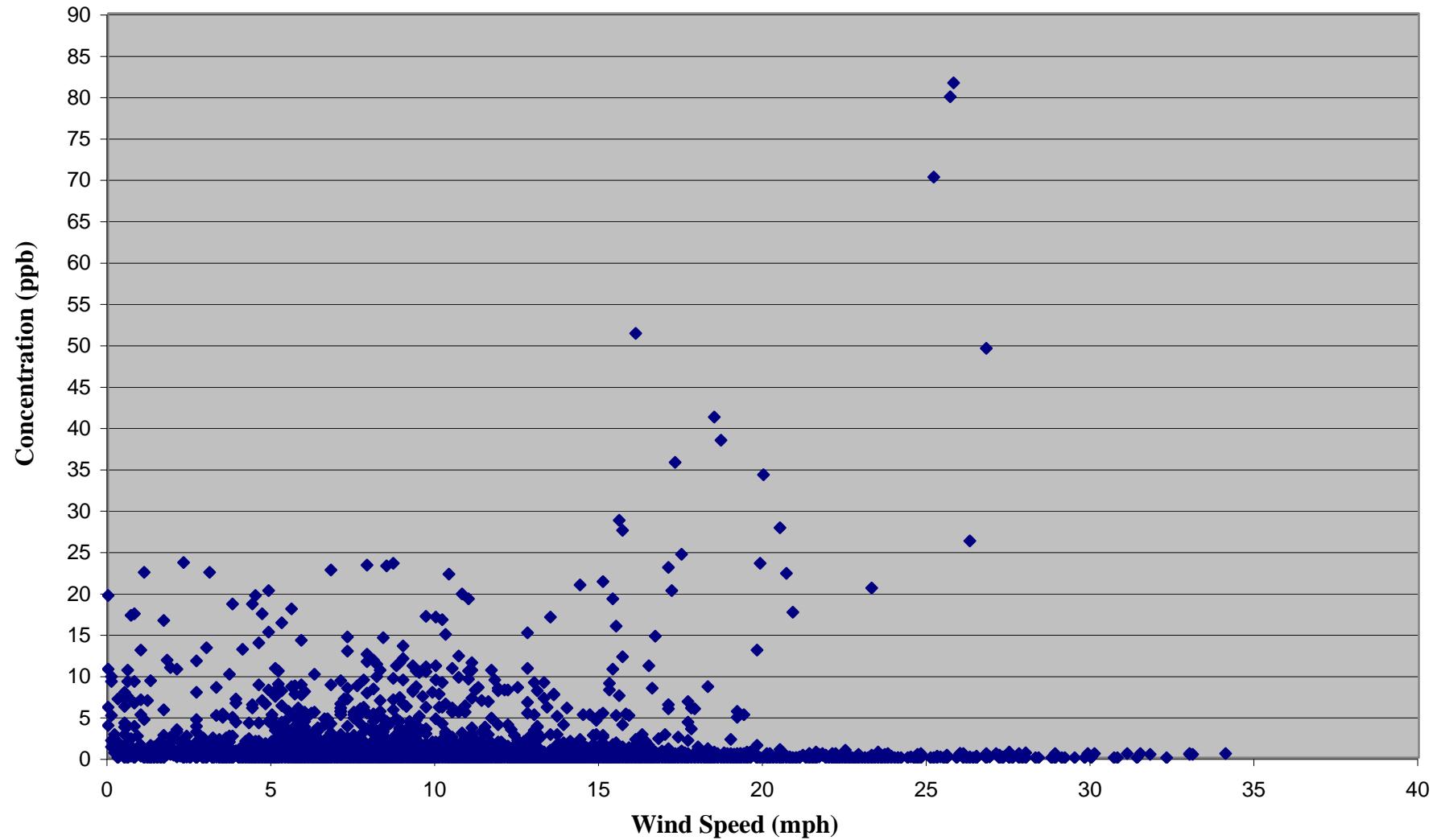
Sioux Center CAFO: Hydrogen Sulfide vs Time



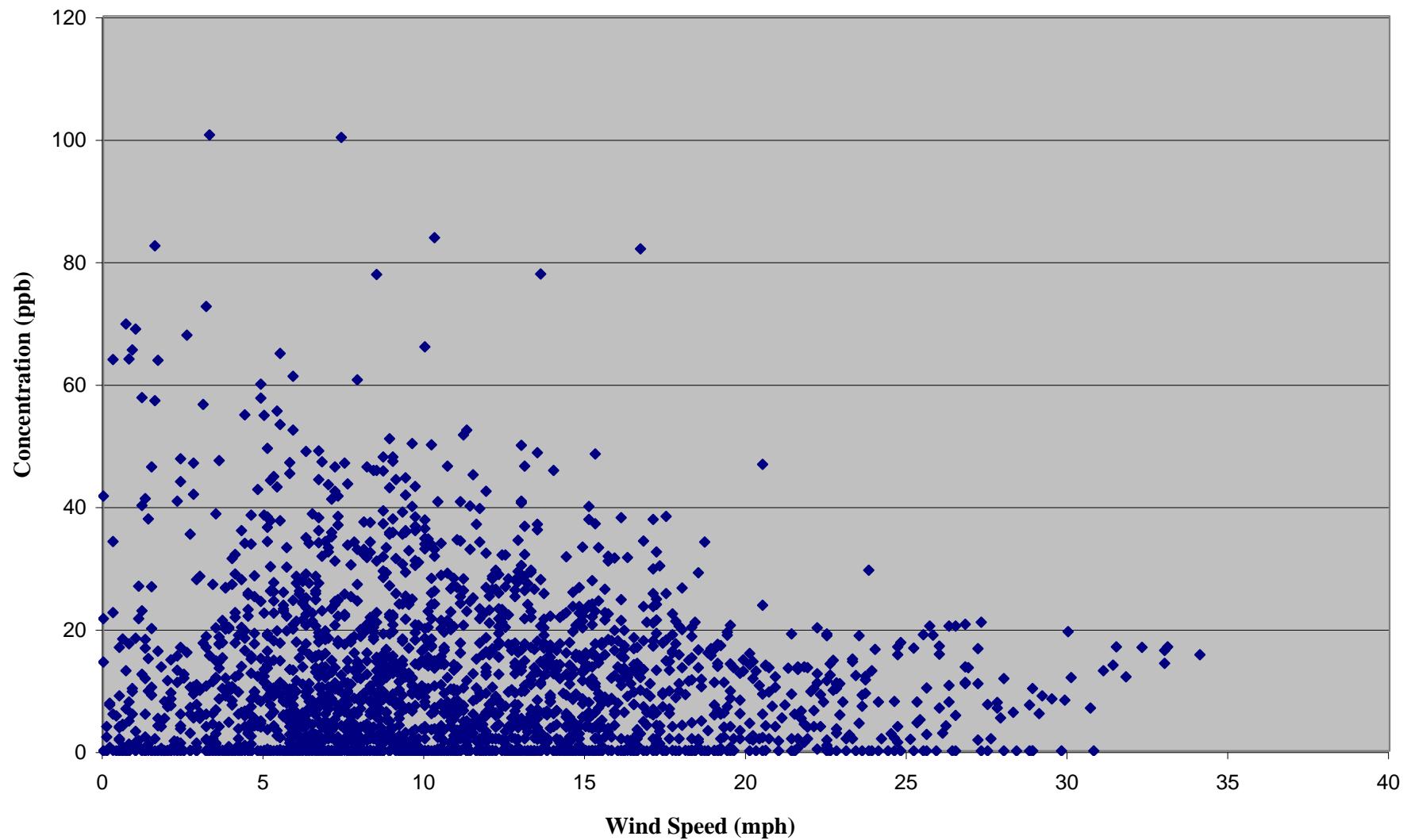
Sioux Center CAFO: Ammonia vs Time



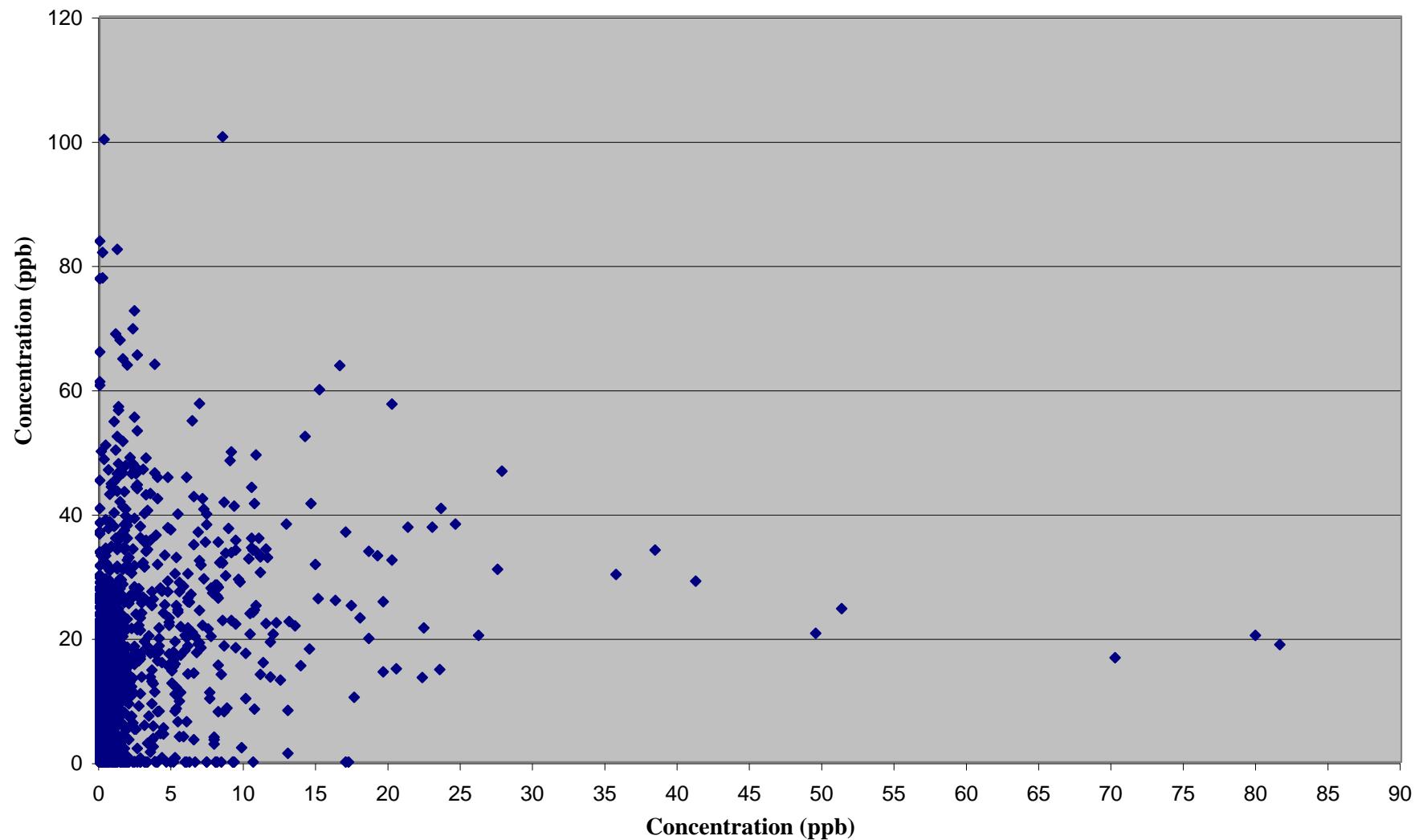
Sioux Center CAFO: Hydrogen Sulfide vs Wind Speed



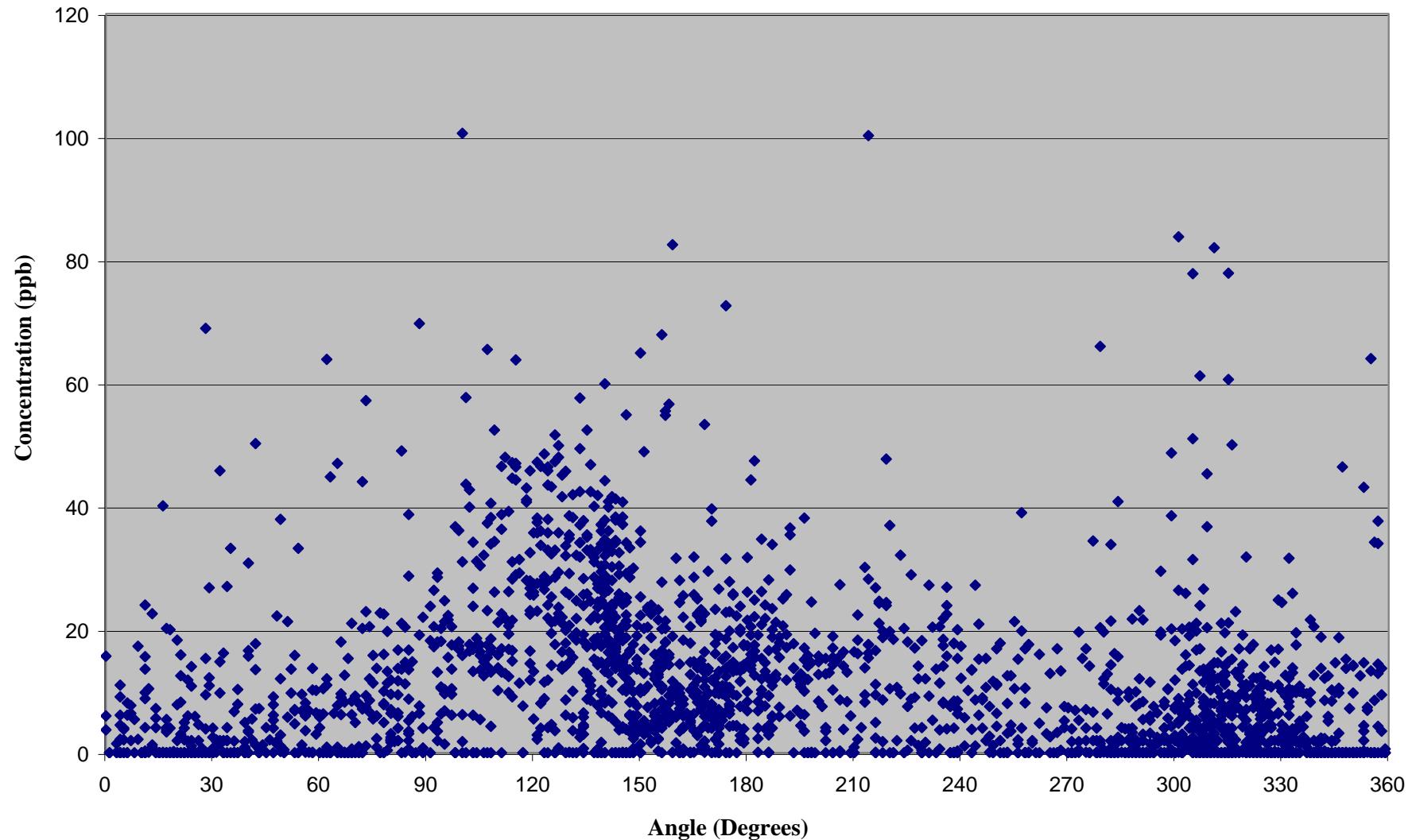
Sioux Center CAFO: Ammonia vs Wind Speed



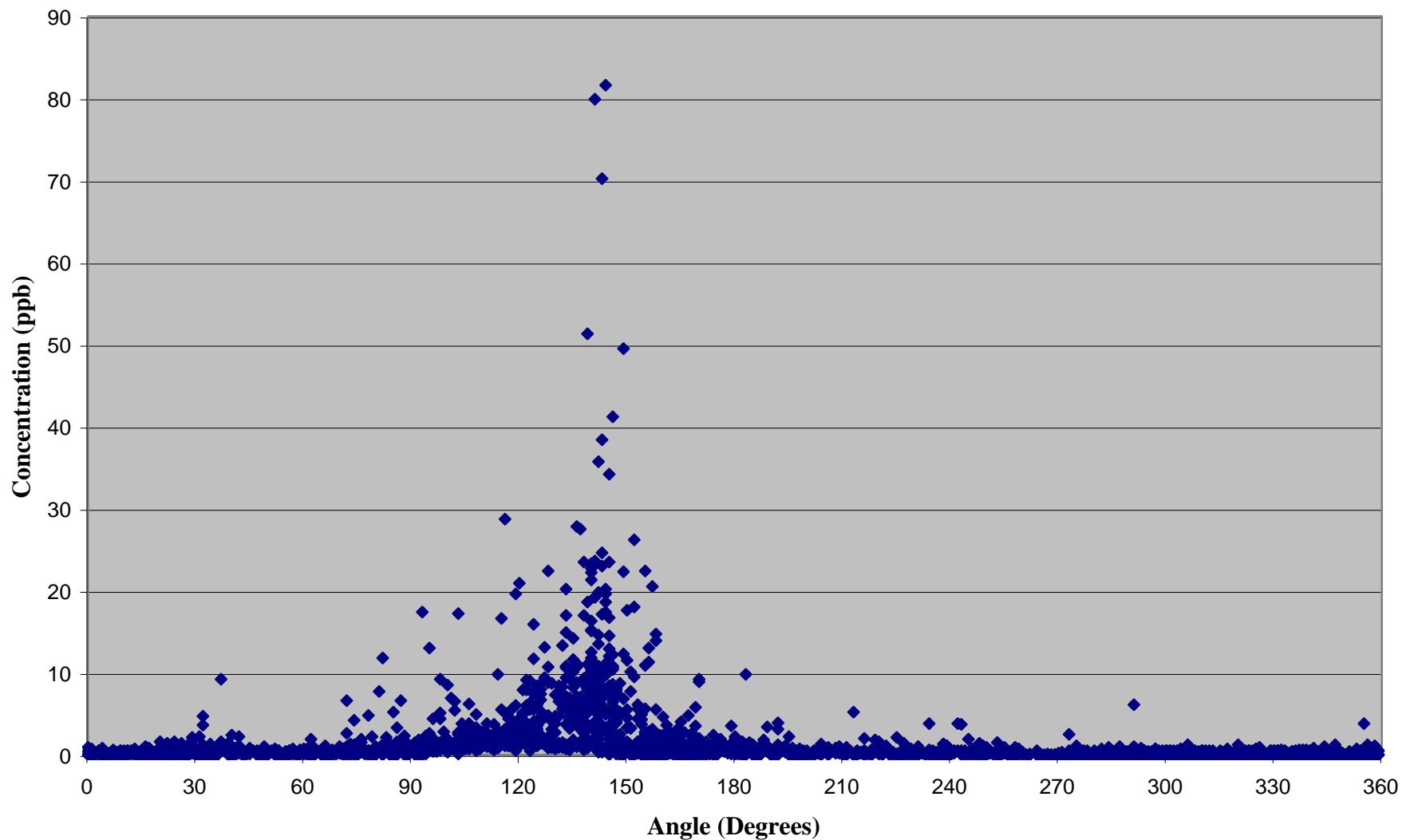
Sioux Center CAFO: Ammonia vs Hydrogen Sulfide



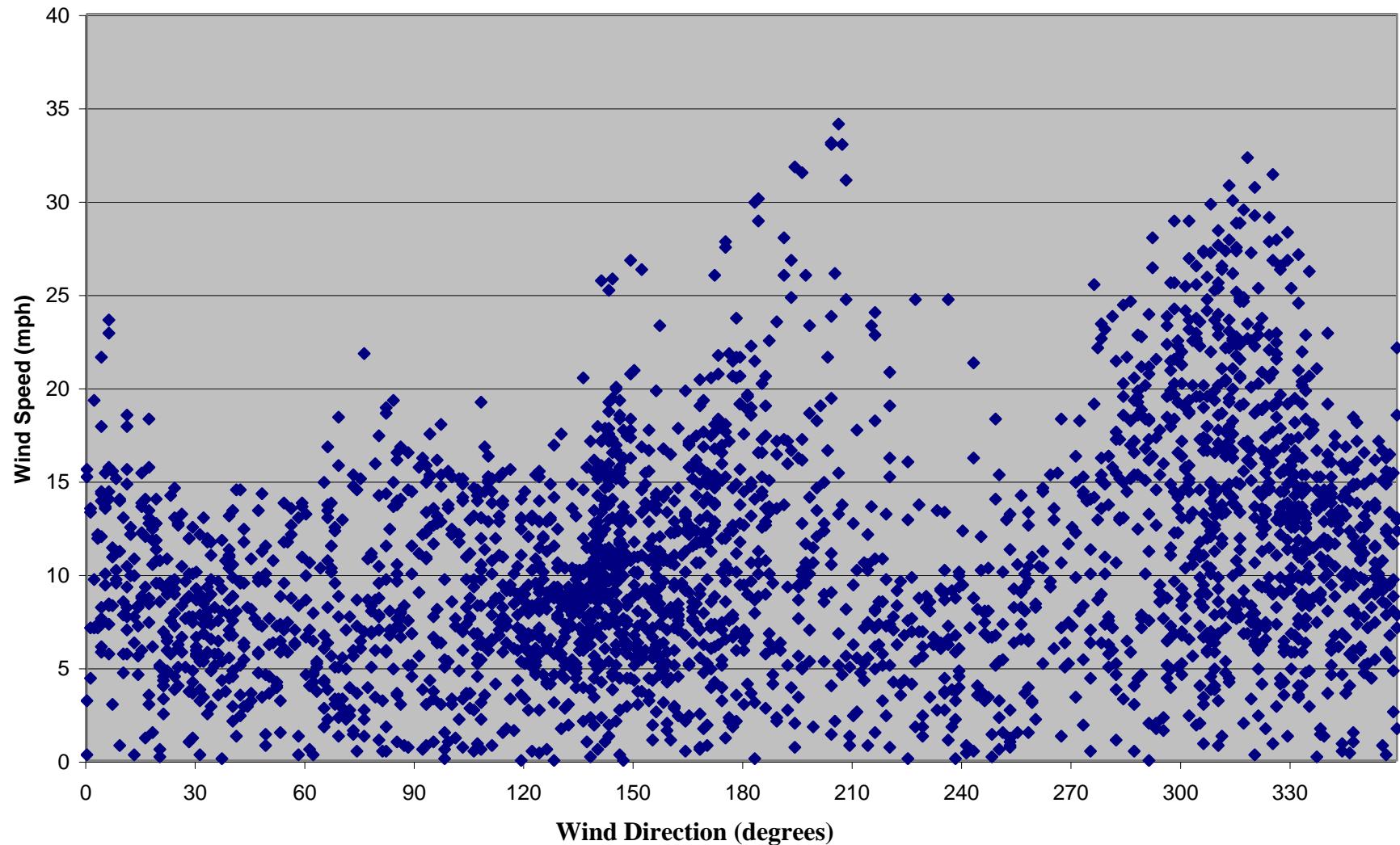
Sioux Center CAFO: Ammonia vs Wind Direction



Sioux Center CAFO-Hydrogen Sulfide vs Wind Direction



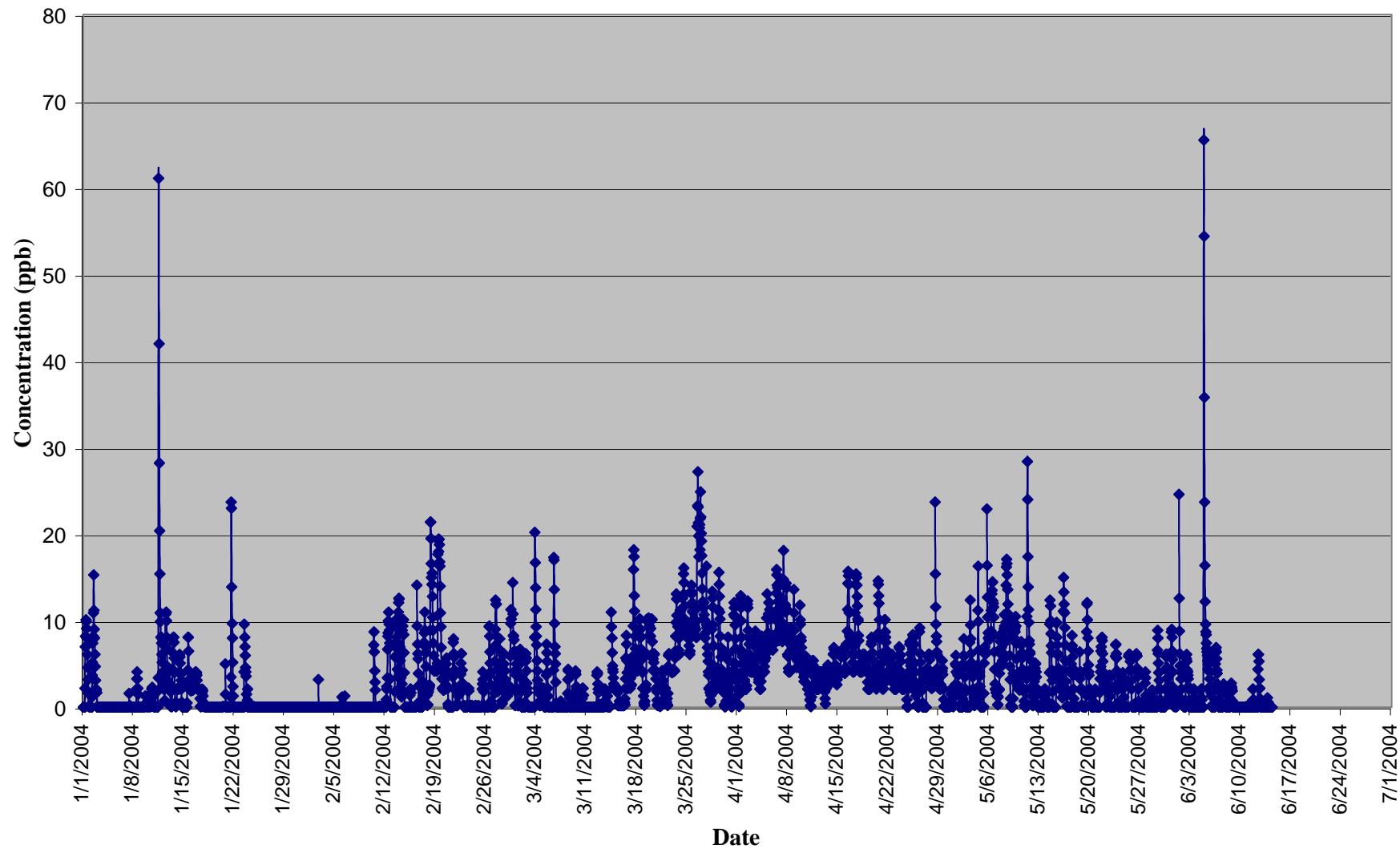
Sioux Center CAFO: Wind Speed vs Wind Direction



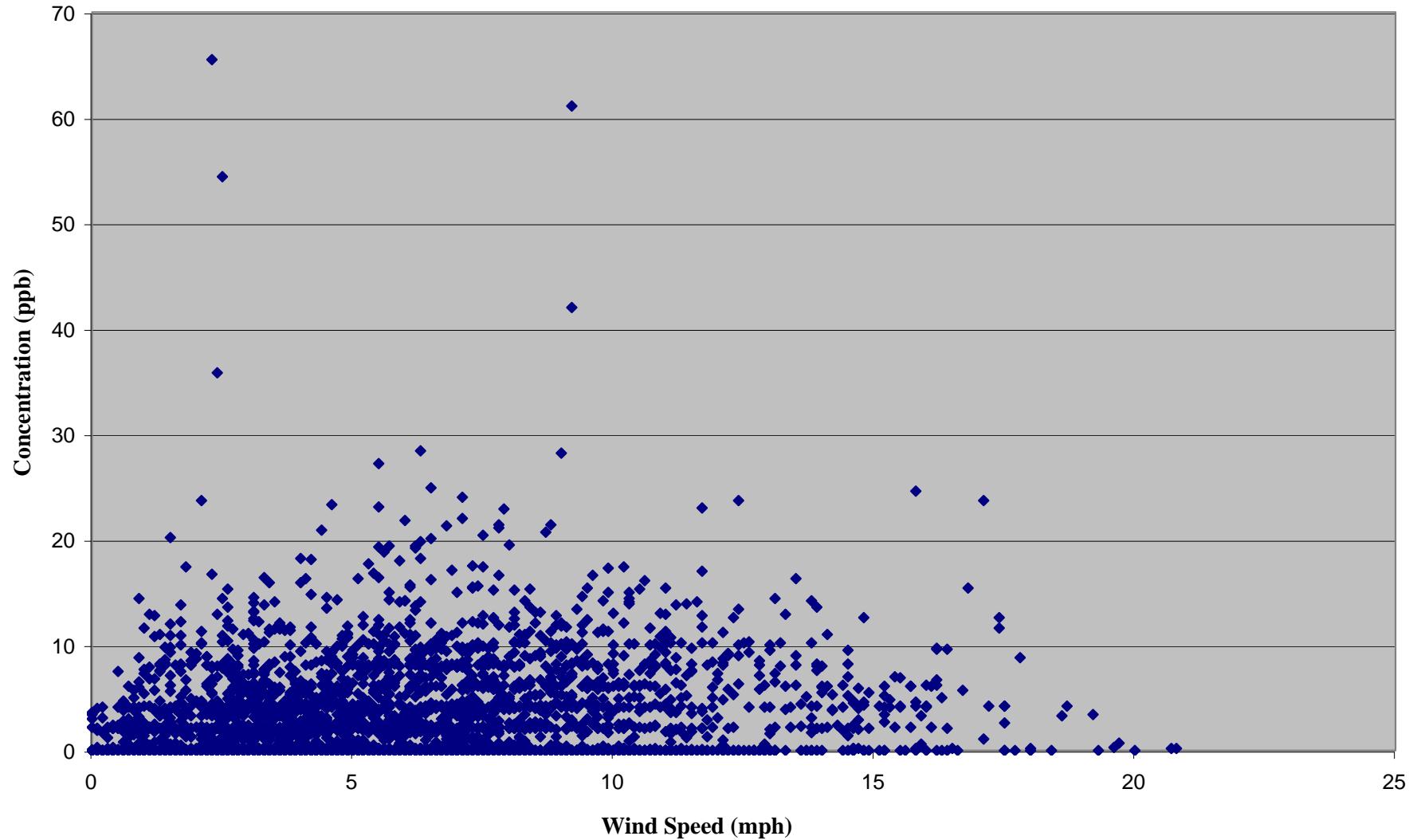
Viking Lake State Park Monitoring Site



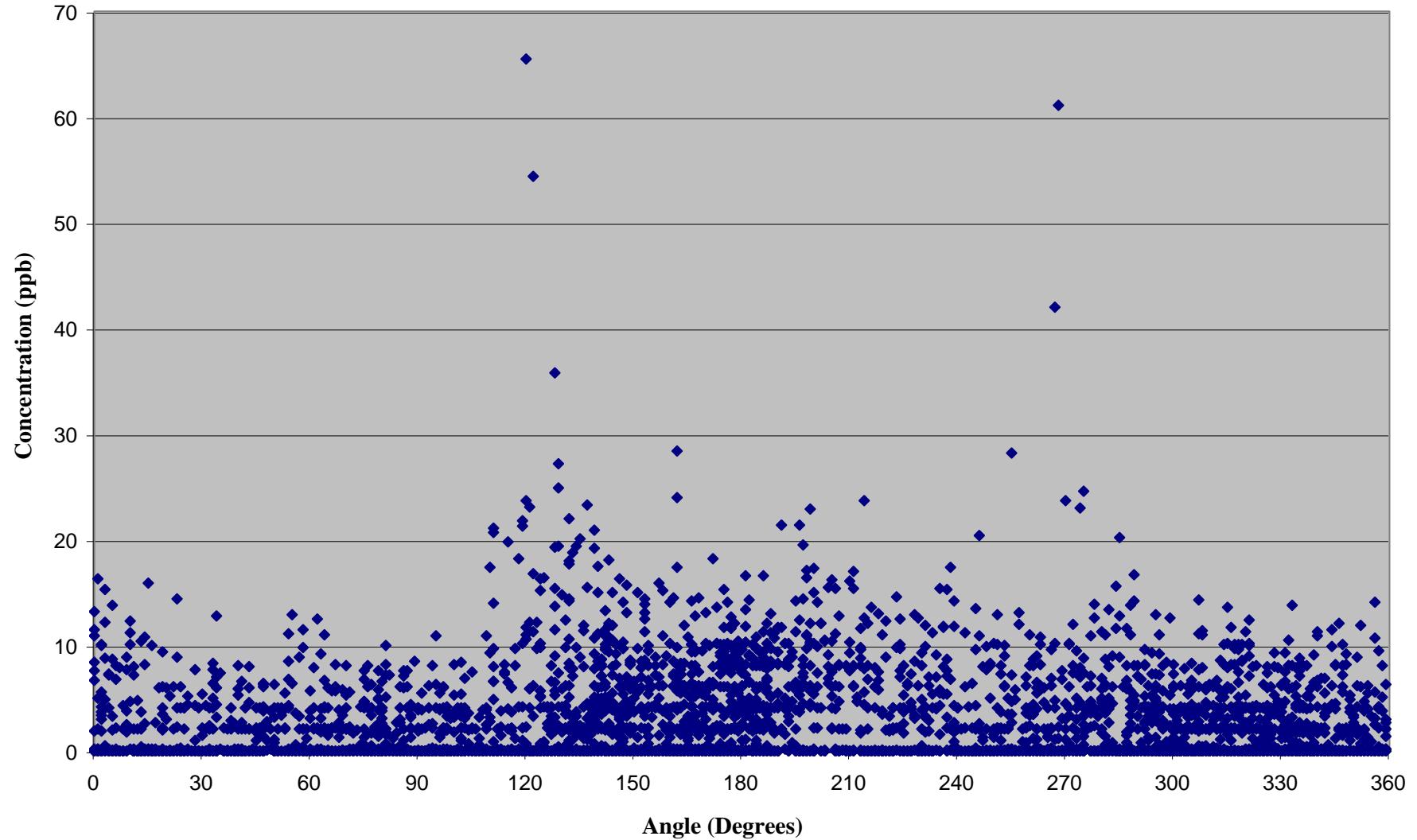
Viking Lake: Ammonia vs Time



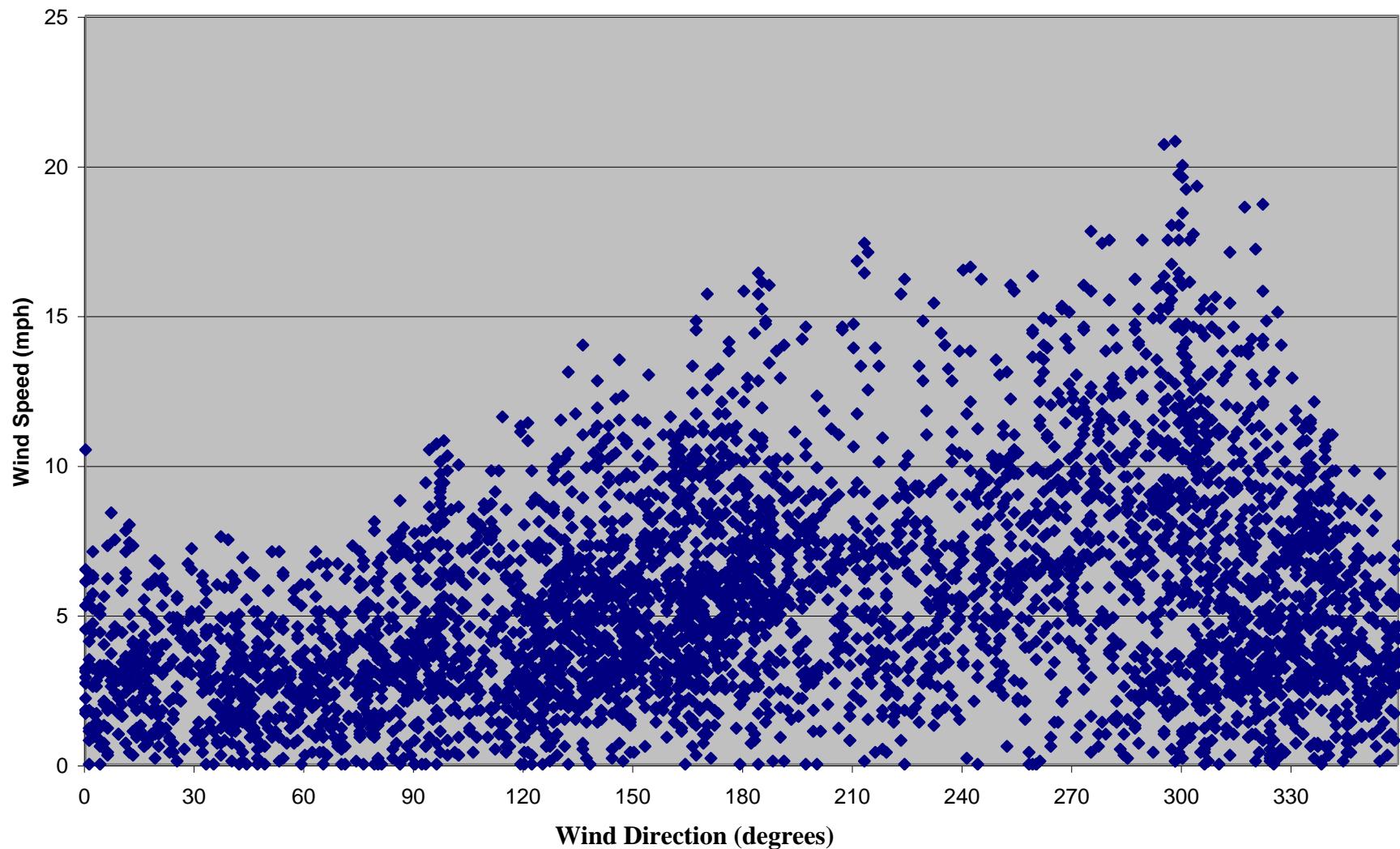
Viking Lake: Ammonia vs Wind Speed



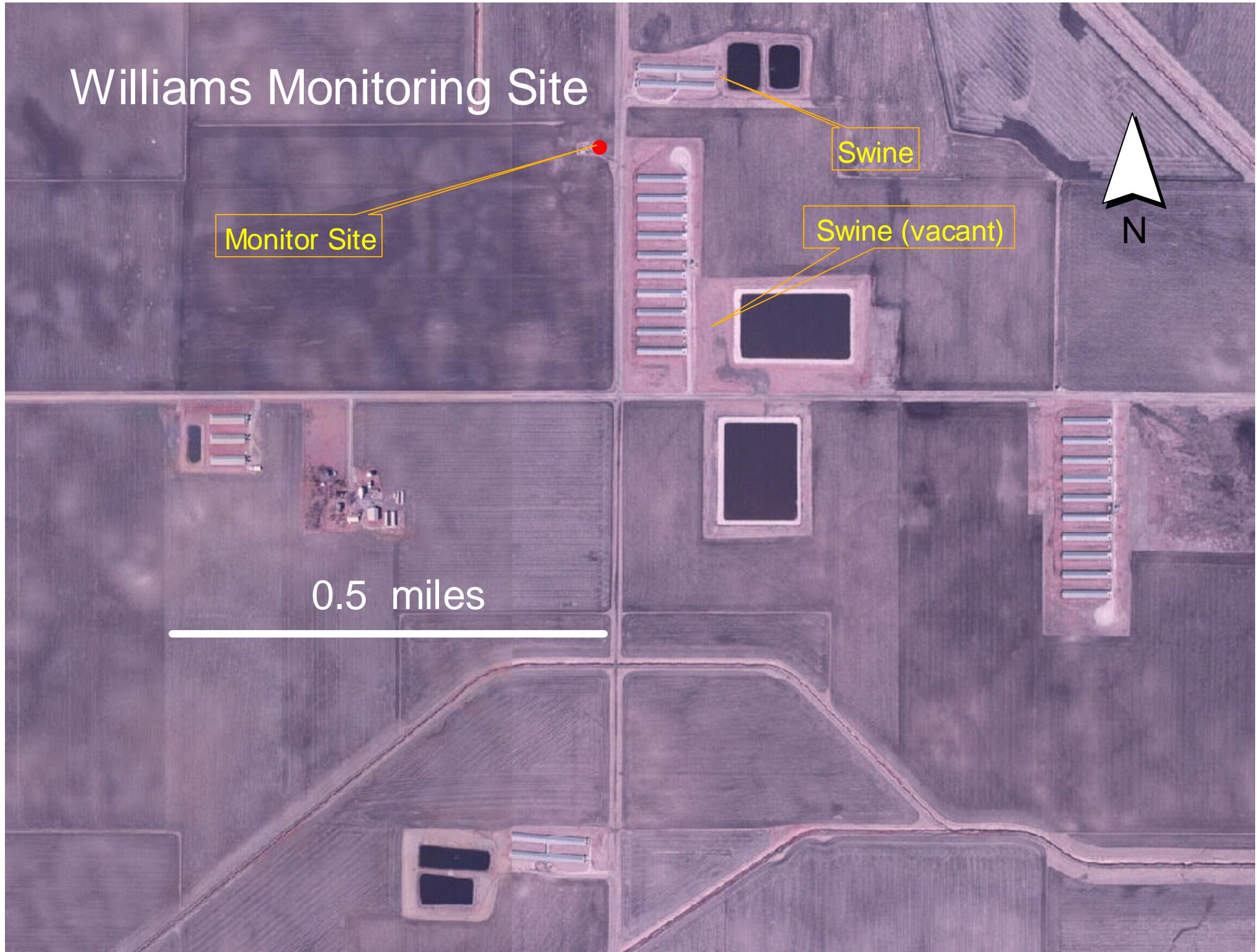
Viking Lake: Ammonia vs Wind Direction



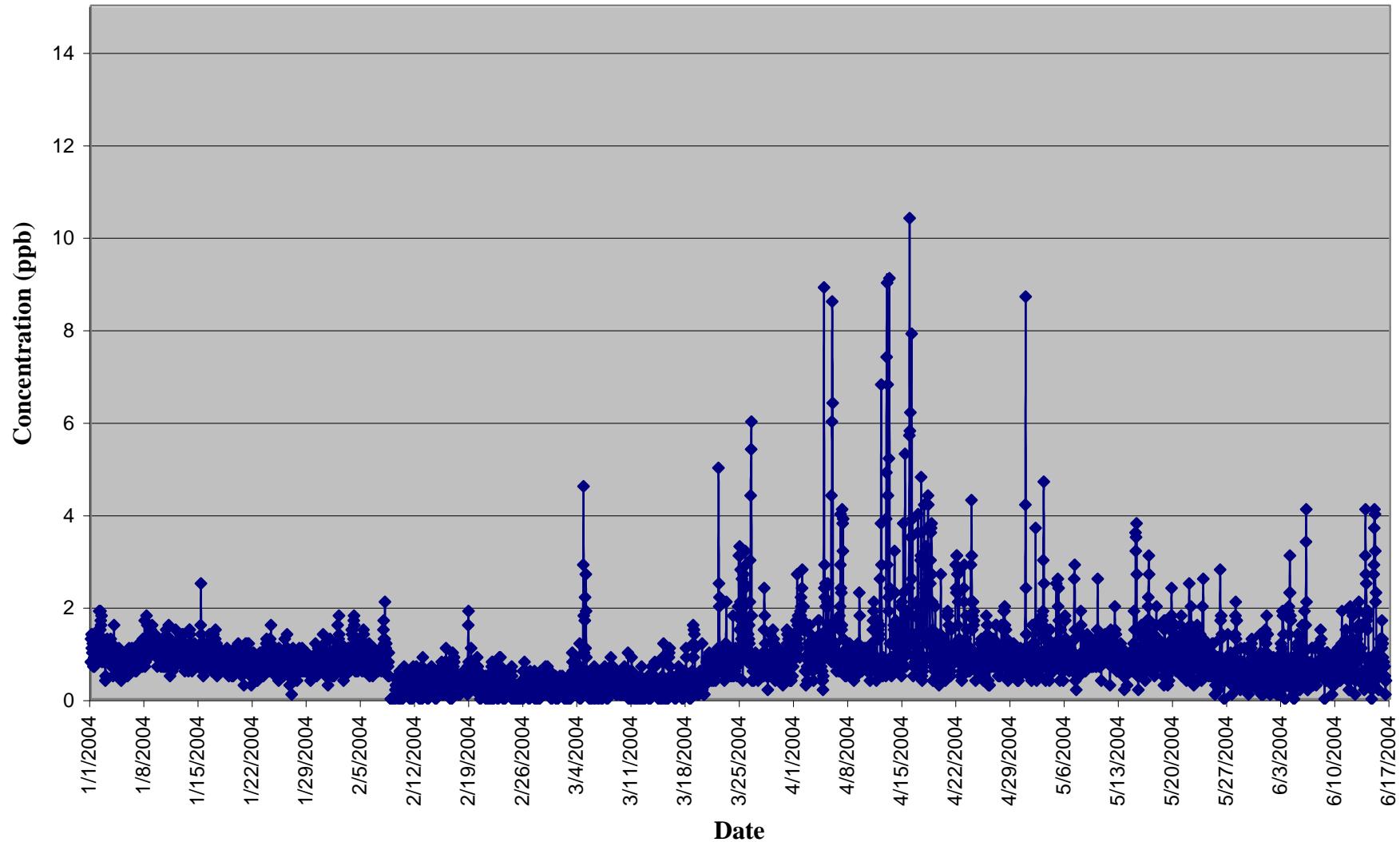
Viking Lake: Wind Speed vs Wind Direction



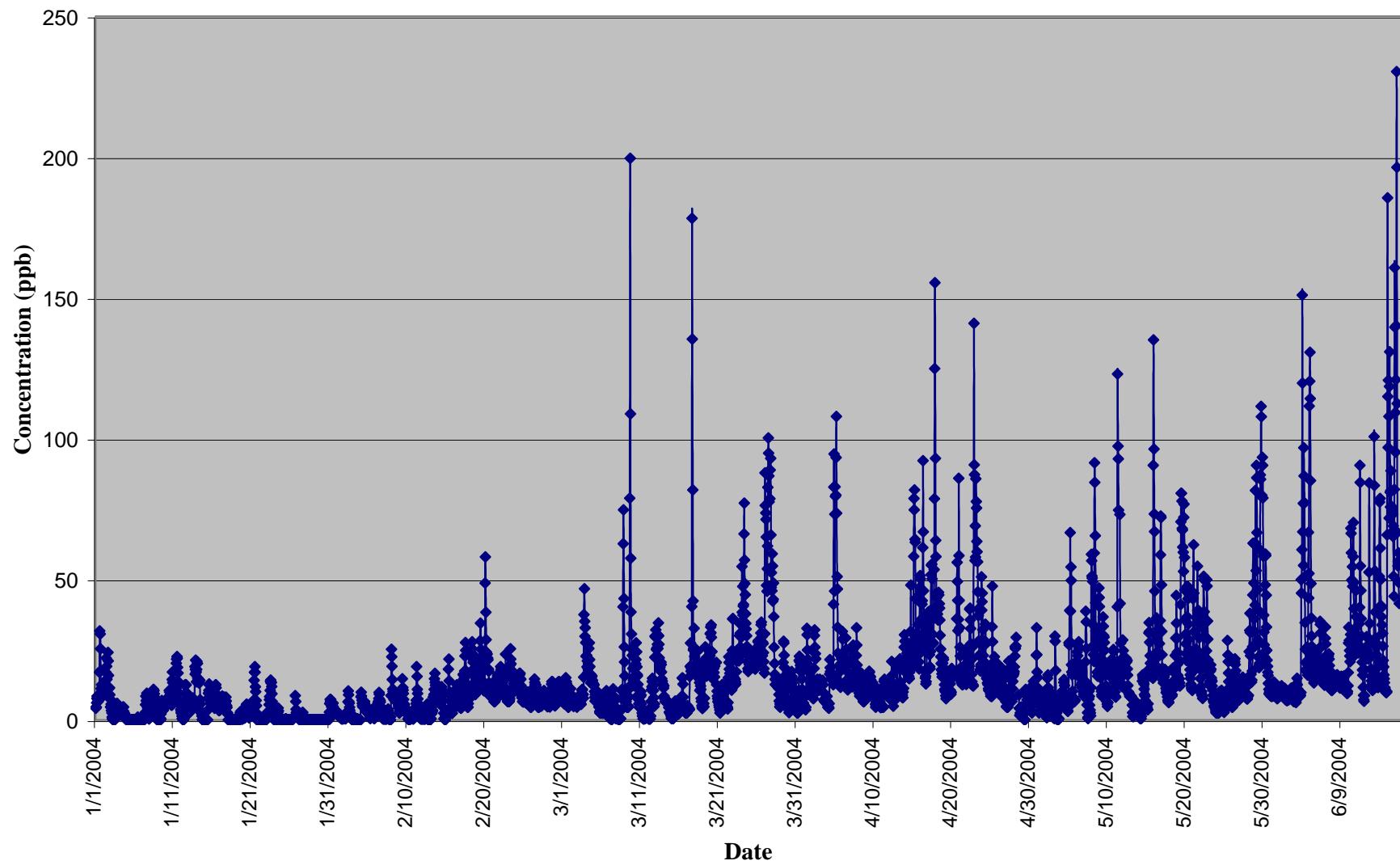
Williams Monitoring Site



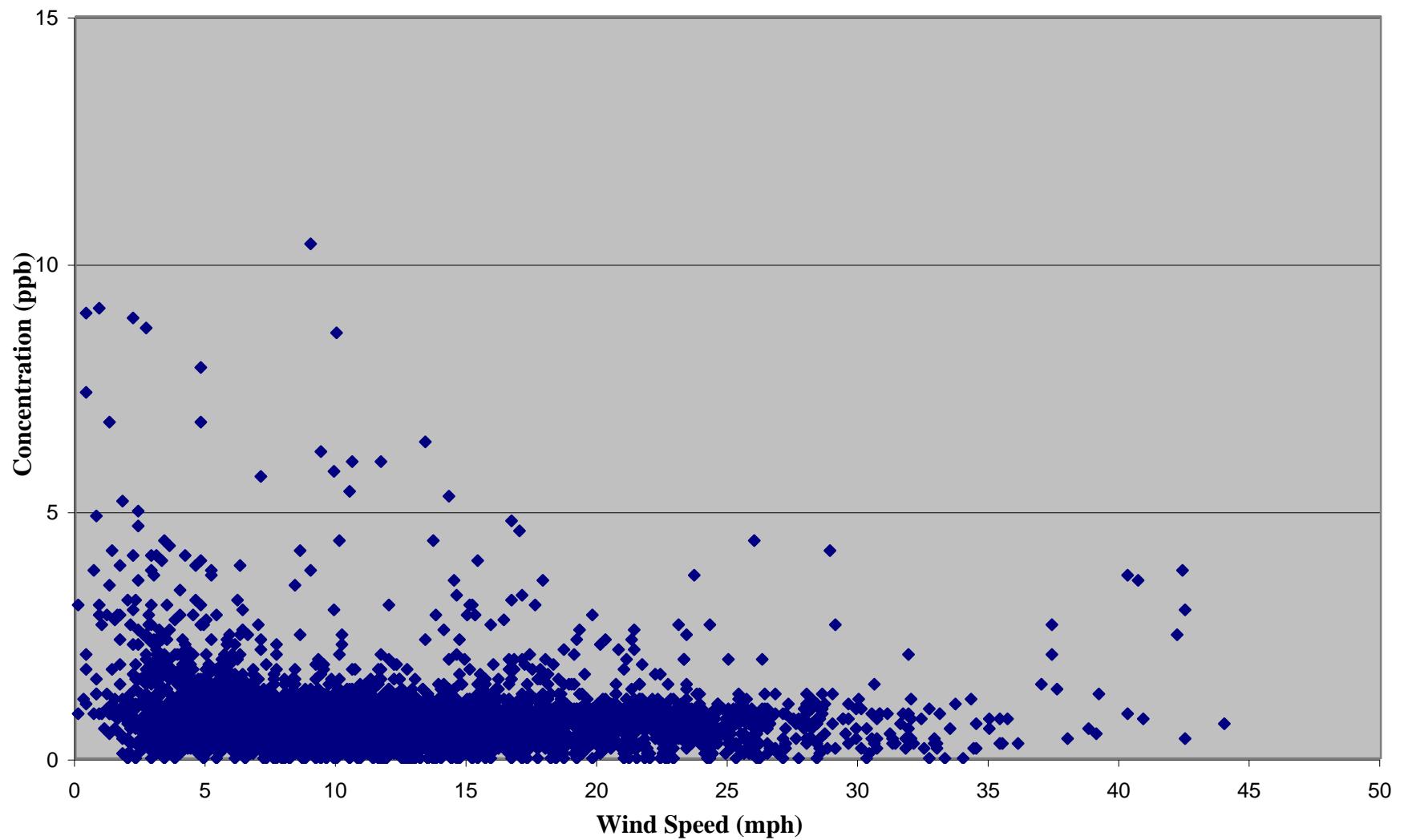
Williams CAFO: Hydrogen Sulfide vs Time



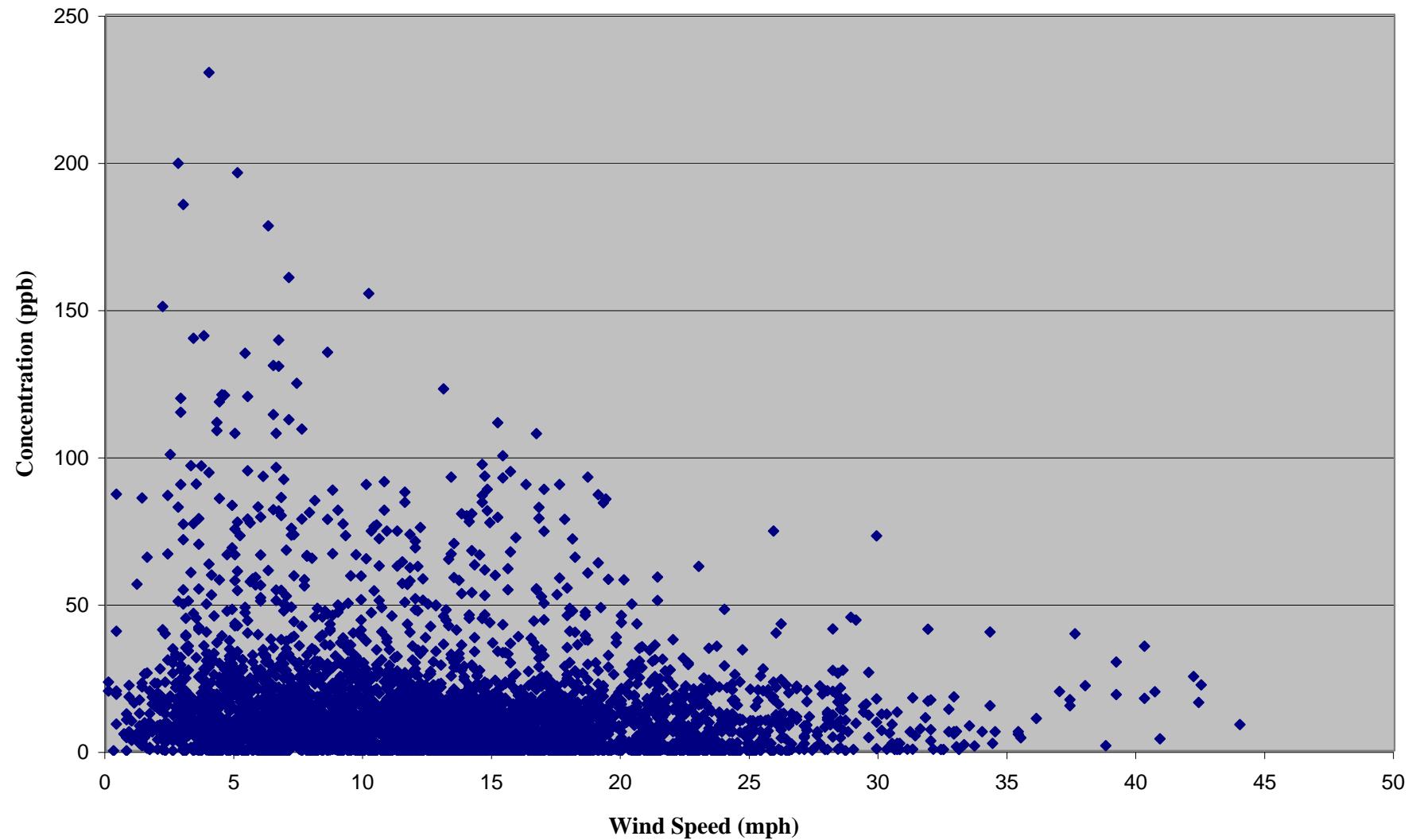
Williams CAFO: Ammonia vs Time



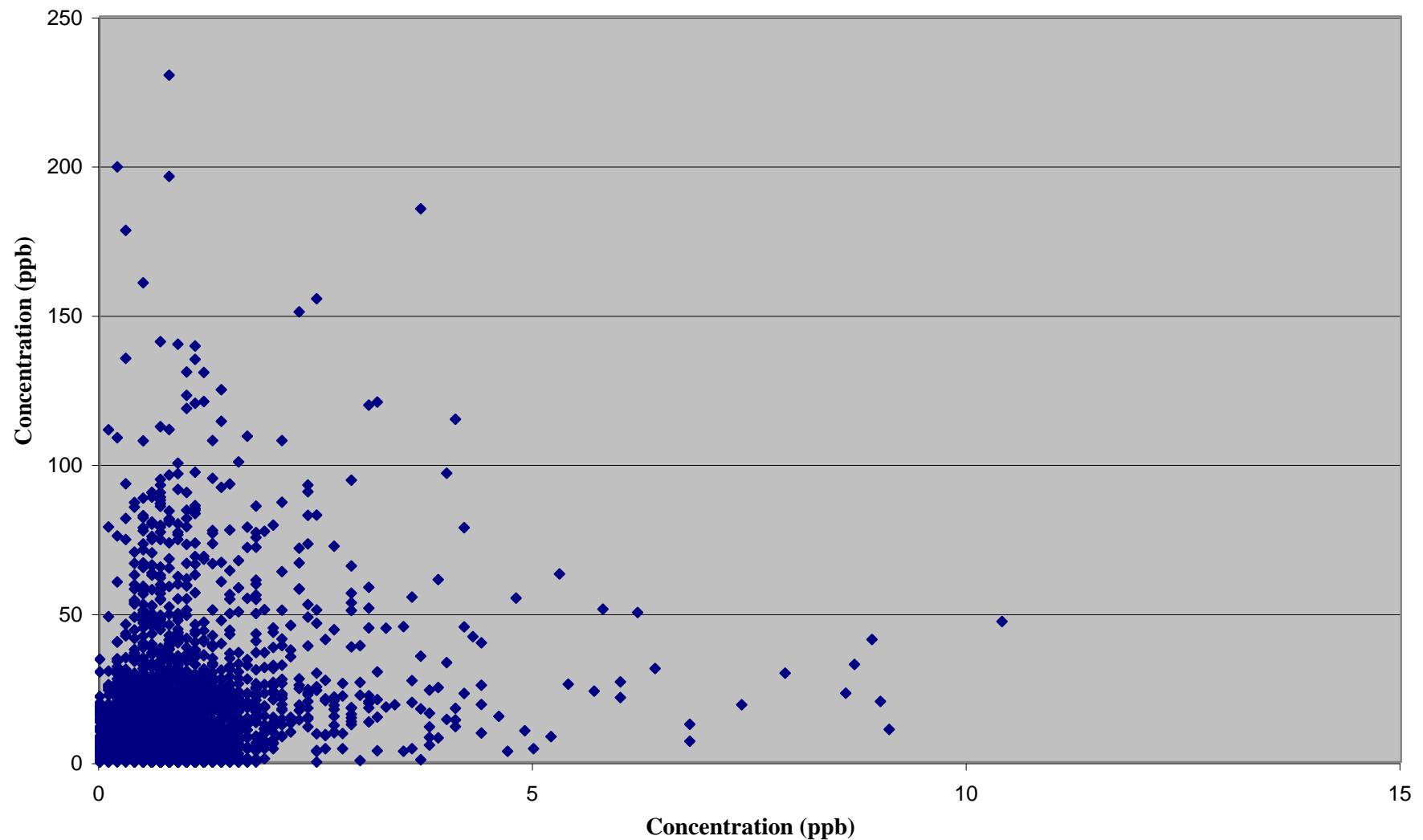
Williams CAFO: Hydrogen Sulfide vs Wind Speed



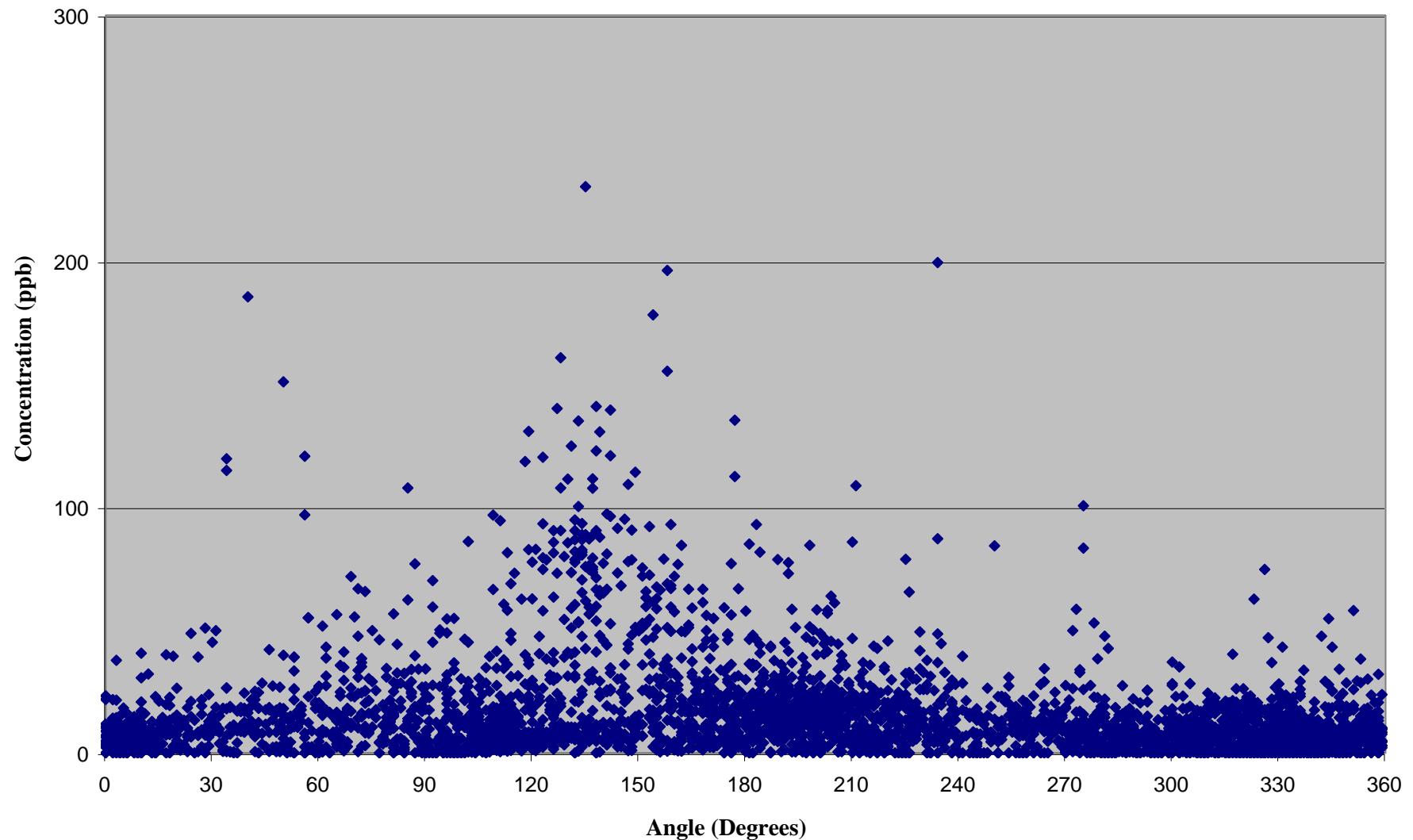
Williams CAFO: Ammonia vs Wind Speed



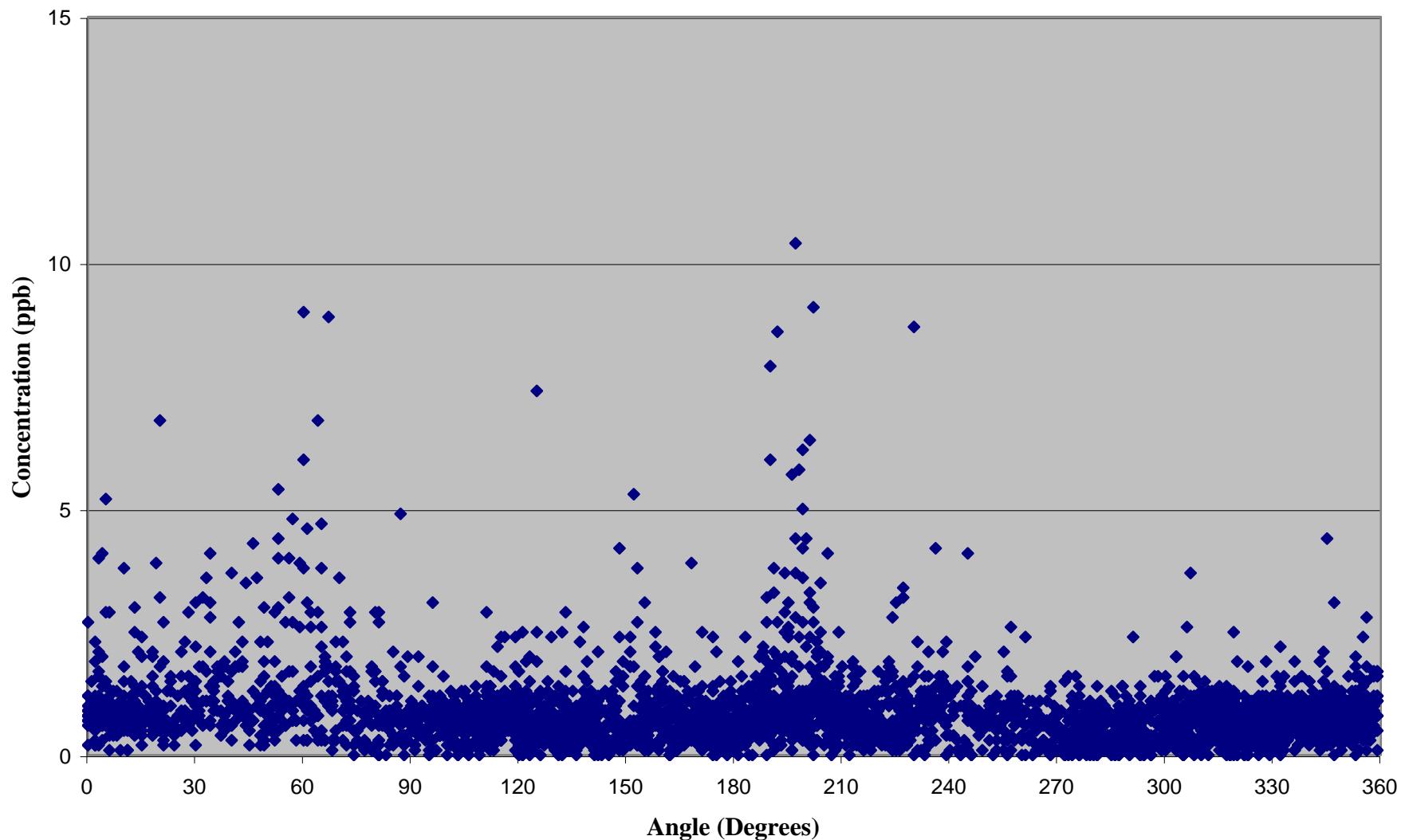
Williams CAFO: Ammonia vs Hydrogen Sulfide



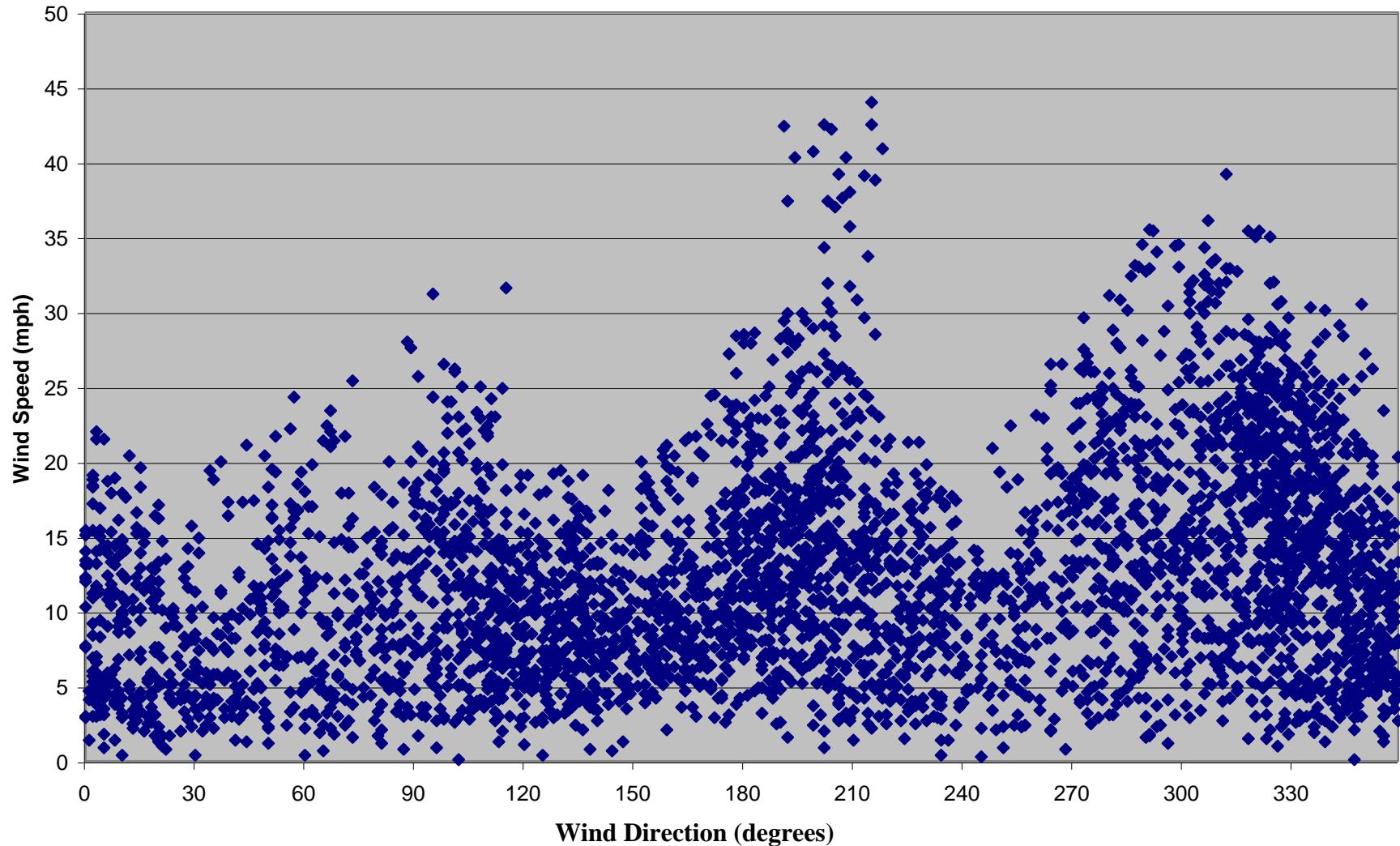
Williams CAFO: Ammonia vs Wind Direction



Williams CAFO-Hydrogen Sulfide vs Wind Direction



Williams CAFO: Wind Speed vs Wind Direction



Woodbine Monitoring Site

Swine

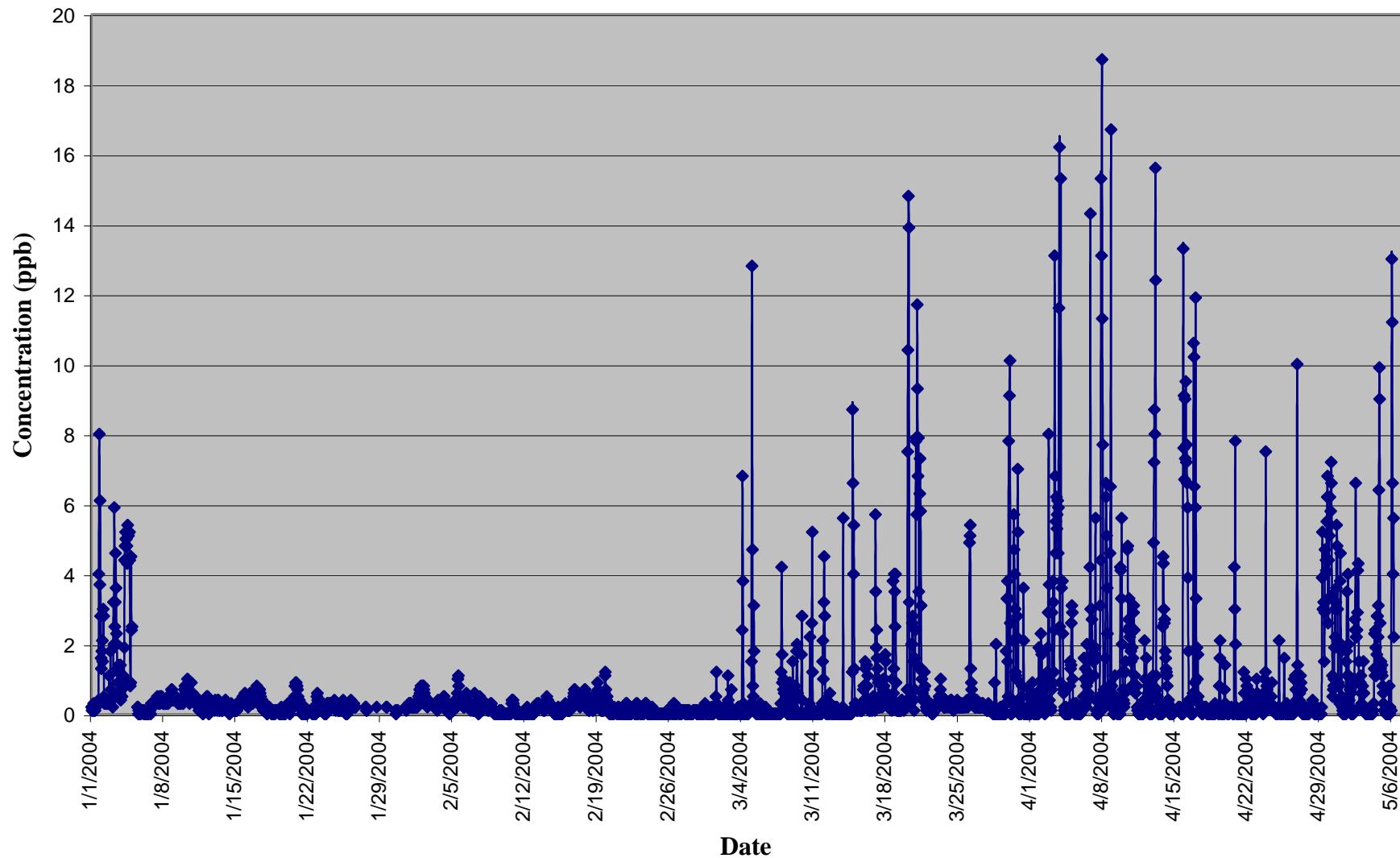
0.5 miles

Monitor Site

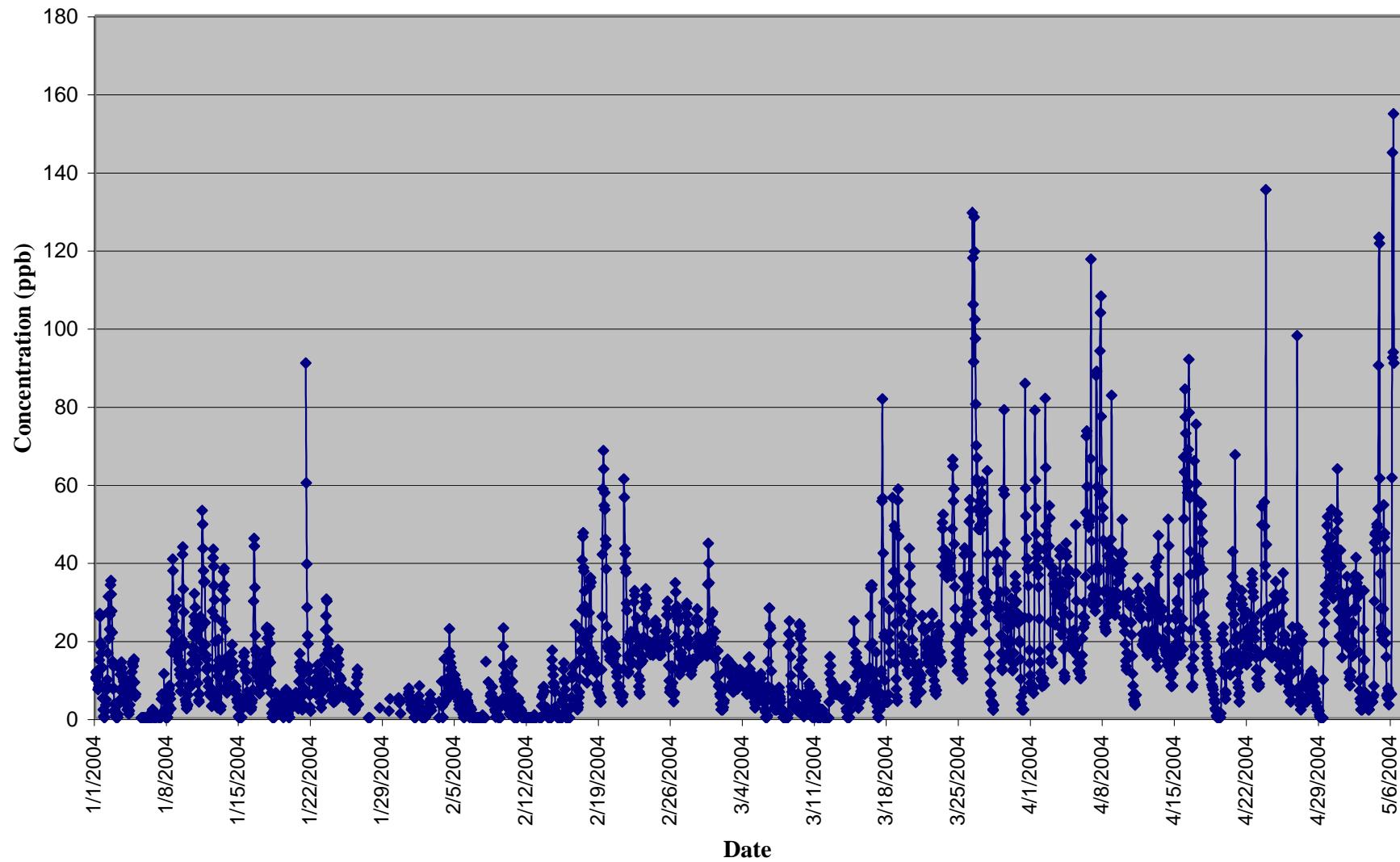
House



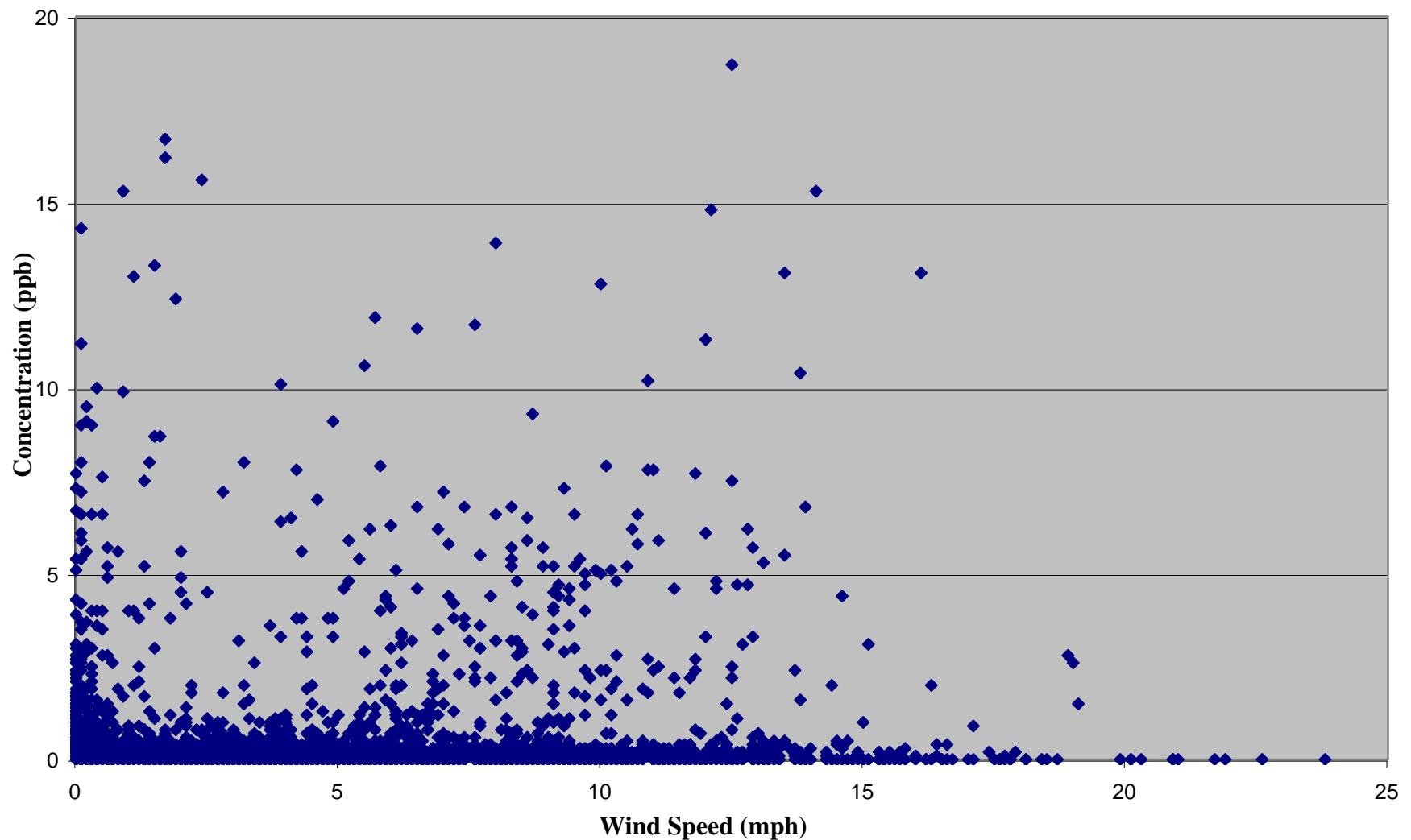
Woodbine CAFO: Hydrogen Sulfide vs Time



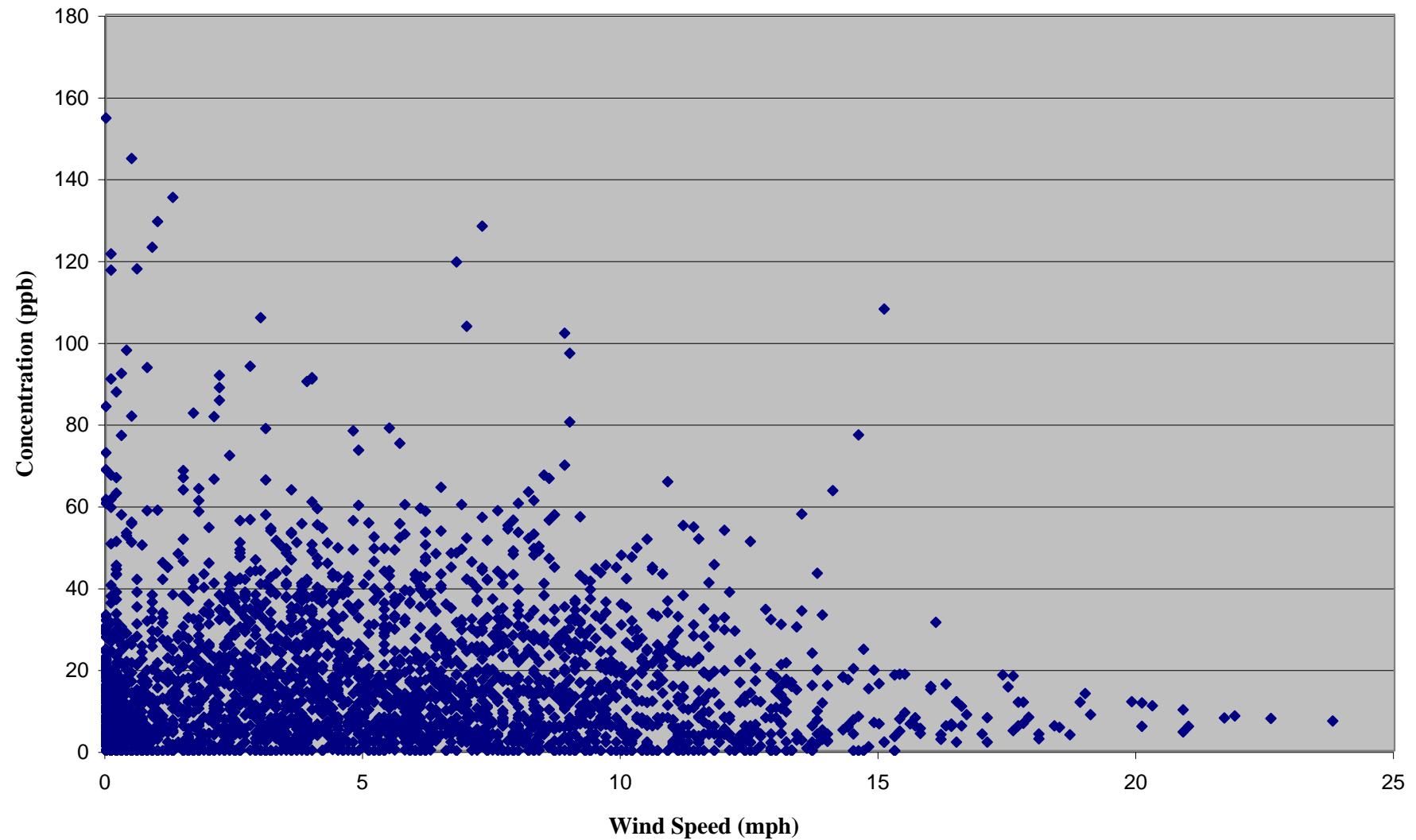
Woodbine CAFO: Ammonia vs Time



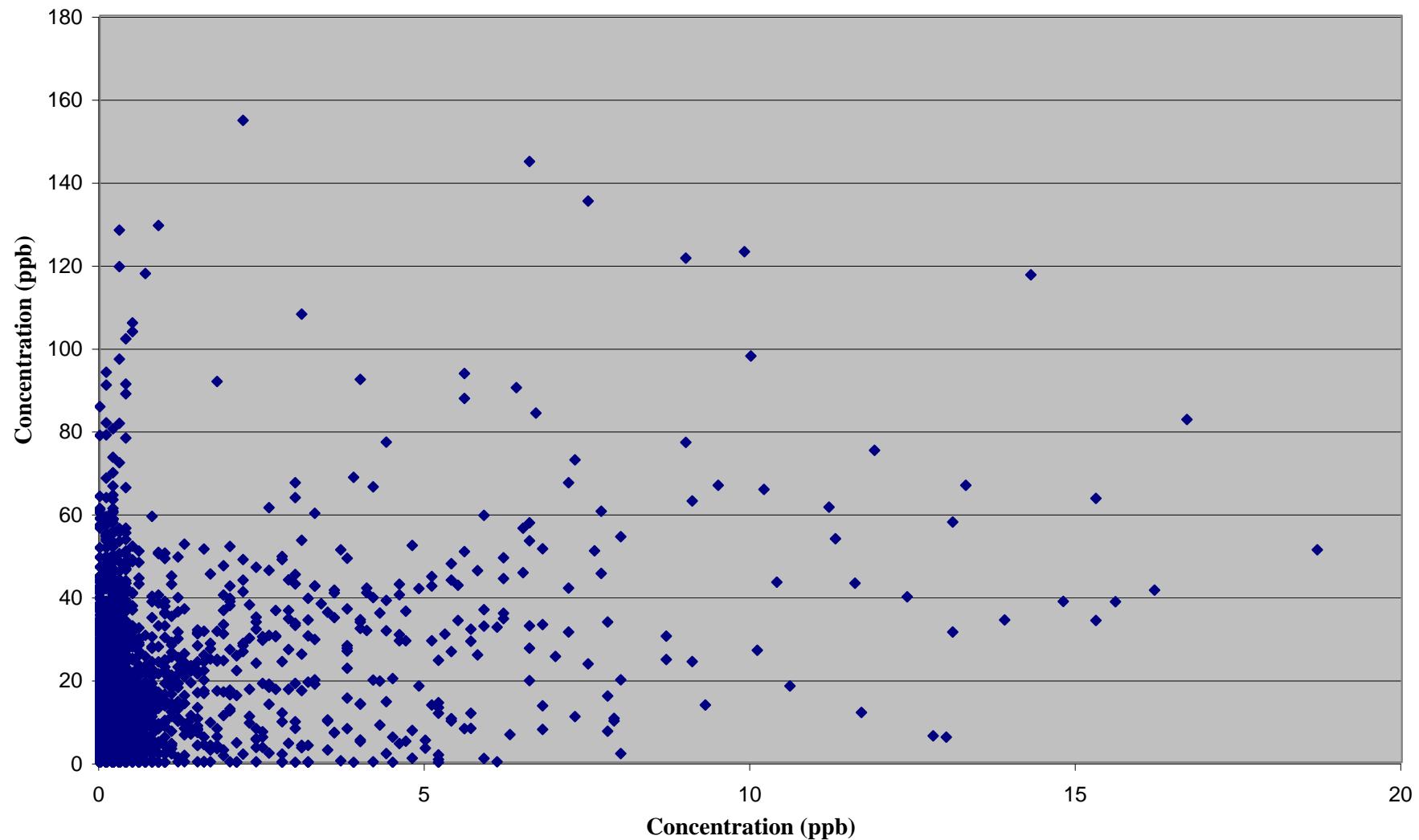
Woodbine CAFO: Hydrogen Sulfide vs Wind Speed



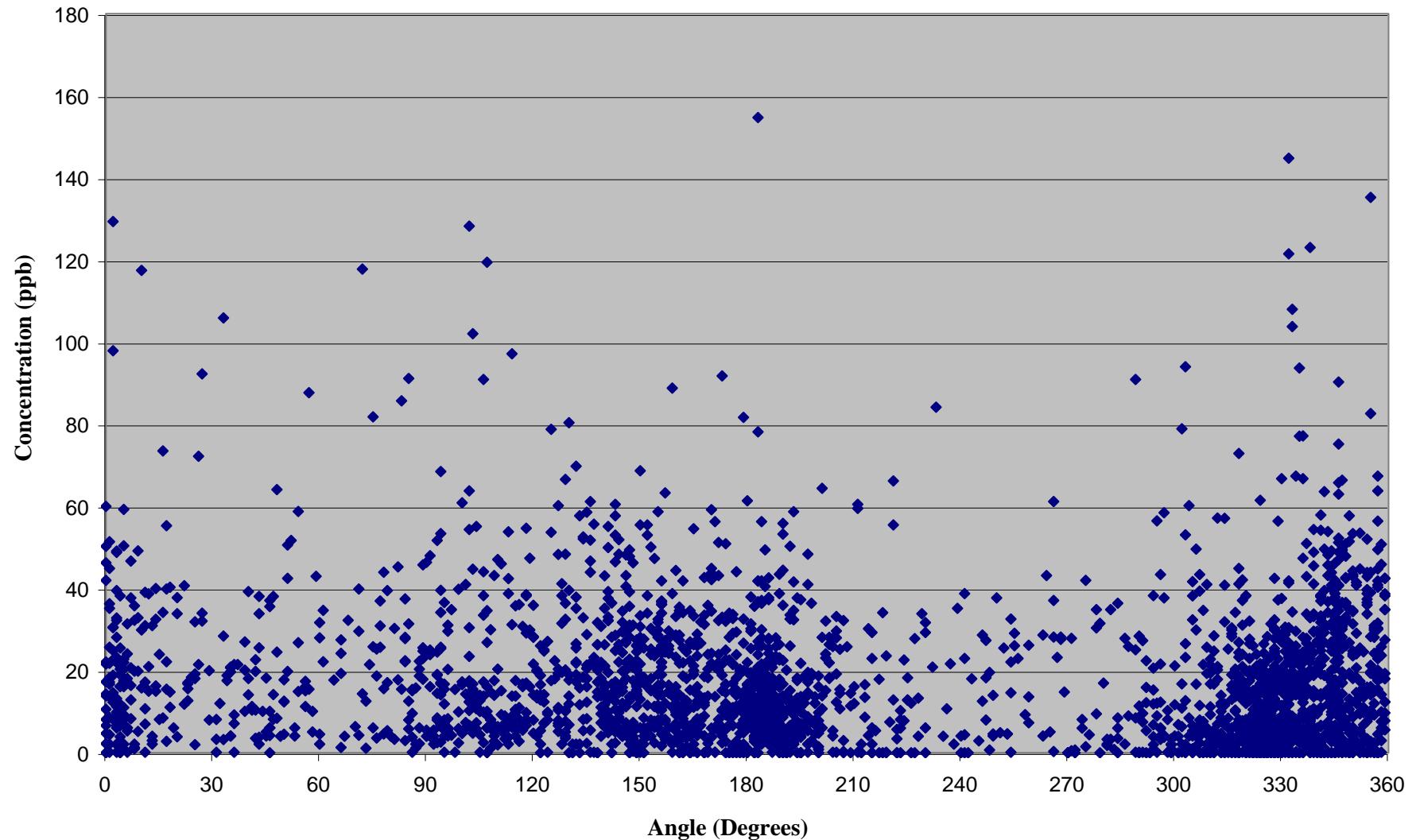
Woodbine CAFO: Ammonia vs Wind Speed



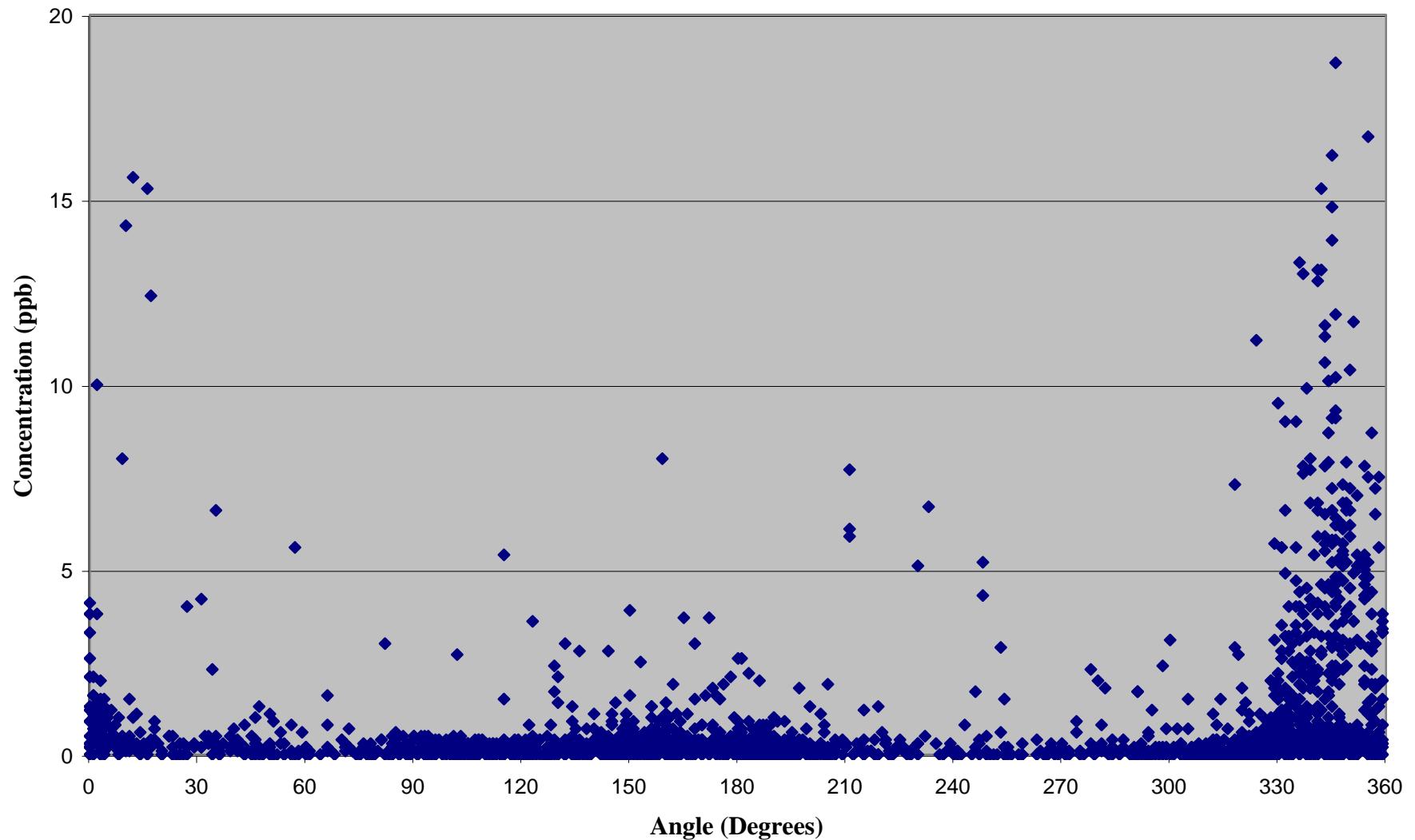
Woodbine CAFO: Ammonia vs Hydrogen Sulfide



Woodbine CAFO: Ammonia vs Wind Direction



Woodbine CAFO-Hydrogen Sulfide vs Wind Direction



Woodbine CAFO: Wind Speed vs Wind Direction

